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## ORIGINAL ARTICLES.

### ANTISEPTIC MEDICATION.<sup>1</sup>

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My purpose in bringing the subject of antiseptic medication before this Association is not so much to make an elaborate report on the existing knowledge concerning it, the principles on which it is based, the results it has accomplished, and my own experience of its application, as to elicit a general expression of opinion upon what appears to me the foremost therapeutic question of the day.

The great principle of antiseptis is of general application in the treatment of disease. It is not limited to the domain of surgery, although to surgeons is due and gratefully accorded the merit of having shown the dangers due to absorption of products of fermentation and putrefaction and the means of avoiding them. The revolution thus brought about has been witnessed by every member of this Association. It is an accomplished fact and, at the present time, the applications of antiseptis in this field are so perfect, so precise, that surgery, in some of its departments, may almost be ranked among the exact sciences.

Antiseptis, in surgery, consists in preventing the absorption of toxic substances from a pathological surface. This is true also to a certain extent in medicine, although here, in many instances, the surface from which absorption takes place is physiological. The difference between antiseptic medicine and antiseptic surgery is one of degree rather than of kind. In the former the antiseptic agent is directly applied to the absorbent surface; in the latter it can, in most instances, only exert its action after having run the gauntlet of the greater portion of the intestine, or even after it has been absorbed and excreted. The problem in the latter case is much the more difficult of the two, but is one which, as I propose to show, is in the course of successful solution.

#### LAVAGE.

A well-defined line can be drawn between gastric and intestinal antiseptis for the reason that in the former we have one remedial measure *par excellence* to which all others are subordinate. I refer to lavage, and it is an interesting fact that Dujardin-

Beaumetz, who opposed this method of treatment when first introduced by Kussmaul in 1867, is now one of its most ardent advocates. He believes it to be indicated whenever the stomach is dilated, no matter what may be the cause of the dilatation. The operation, which may be compared to catheterism for the relief of a distended bladder, is not to be performed without certain precautions. In the first place, it should not be performed too frequently. Once in twenty-four hours is often enough. Secondly, the water employed should be at, or near, the temperature of the body. Thirdly, in order not to interfere with the digestion of which the stomach may be capable, it should be performed during a period of abstinence from food, *e. g.*, early in the morning. These precautions are by no means founded on theory alone. If lavage is repeated too often, it not only fatigues the patient, but may lead to grave accidents. For example, in a case reported by Dujardin-Beaumetz to the *Soc. Med. des Hôpitaux*, October 26, 1883, the patient experienced great relief from the treatment and having learned to wash out his stomach for himself, acquired the habit of doing so several times a day. This abuse of the method gave rise to muscular contractions which, beginning in the upper extremity, soon became general, and the man died with all the symptoms of tetanus. Lavage has been most often employed in the treatment of dilatation from pyloric stenosis, and certainly with most satisfactory results. The painful distention of the stomach, the nausea, regurgitations, and vomitings are, in most cases, allayed by this simple means.

There is another form of gastric disorder often overlooked and only recently clearly differentiated, in which lavage is of most signal service, *viz.*, that in which the gastric juice, instead of being secreted only when there is food in the stomach, is poured out when the viscus is entirely empty. This condition of hypersecretion must not be confounded with hyperacidity. The latter consists in a too liberal response to a physiological summons, while the former is gratuitous. First described by Reichmann in 1882, cases have since been reported by Sahli, Schütz, von den Velden, and especially by Riegel, who, in the course of eighteen months, observed twenty-nine cases. According to the latter, lavage should be practised in cases of hypersecretion just before the principal meal and in no other affection is it attended with greater benefit.

<sup>1</sup> Read by title before the Association of American Physicians, Washington, 1888.

For washing out the stomach simple water is sufficient, but when the viscus is emptied it may be finally cleansed with an antiseptic solution, such as salicylic acid three-fifths per mille, or borax two-fourths per cent. These harmless substances are quite efficacious, although benzoic acid, naphthalin, potassium permanganate, and resorcin are recommended. The latter substance is unsafe, except in very weak solution. Escherich<sup>1</sup> reports a case of poisoning from lavage with a one per cent. solution of resorcin. The patient was a woman, æt. thirty-five, who, after lavage, became restless and cyanotic and soon lost consciousness. Clonic and tonic spasms then set in, the latter affecting particularly the masseters and the respiratory muscles. There were trismus and prolonged spasm of the glottis with stoppage of respiration, during which the face was extremely livid and cold drops of sweat stood upon the forehead. After life had been maintained for about two hours by continual artificial respiration, natural breathing and consciousness returned, but the action of the heart now became weaker and it was only by the most energetic measures that life was saved. For hours the patient lay in a stupid, drunken-like ("rauschartig") condition.

#### INTESTINAL ANTISEPSIS.

The principal field of antiseptic medicine is the intestine, and this fact, which is one of increasing importance, has been recognized ever since Selmi, in 1872, discovered in the products of putrefaction, and even in fresh vegetable tissues, certain substances closely resembling the vegetable alkaloids to which he gave the name of ptomaines.

It is, however, justly claimed, that Semmola, who twenty years ago administered the alkaline and earthy sulphites with the object of destroying certain supposititious substances of a toxic and pyrogenic nature, was the first to institute a treatment based upon the idea of intestinal antiseptics.

At the present day it is very generally held that many forms of diarrhoea are due to irritation by substances which have escaped the powerful antiseptic action of the bile and gastric juice, while it is believed by some that many of the grave nervous symptoms of the continued fevers, the so-called typhoid symptoms, are due to the absorption of similar products.

The therapeutic problem is to administer such substances as will supplement the defective action of nature's antiseptic secretions, a problem which, as I have already stated, is in the course of successful solution. It is not my intention in this paper to enumerate the many substances that have been used to fulfil this indication, but merely to give some de-

tails concerning the few of which I have had some experience.

**NAPHTHALIN.**—This substance was first employed by Rossbach in 1884 as an intestinal antiseptic. He obtained excellent results from it in the treatment of chronic intestinal catarrh, either with or without ulceration, and in typhoid fever, in which disease, when early administered, he believes it exerts an abortive effect. Thirty-five cases of typhoid in Rossbach's medical service at Jena were treated with naphthalin by Götze, all of which took over seventy grammes in the course of their treatment; many of them over a hundred and fifty grammes. The favorable effect of the drug was shown by the number of the stools, which averaged from one to three daily. Severe diarrhoea, requiring the addition of opium to the treatment, was observed in but three cases. The pain in the ileo-cæcal region rapidly diminished, disappearing, as a rule, on the second day. On account of the dark color of the urine produced by the drug, this fluid was frequently examined and the albuminuria in this series of cases was no more frequent or severe than in cases of typhoid in general. In one case in which death was caused by croupous pneumonia there were acute nephritis and typhoid ulceration of the renal pelvis, the former being due to the latter.

Of the 35 cases, 17 (50 per cent.) were so materially shortened in their course that the term "abortive" is fairly applied to them, while the course of the fever was favorably influenced in the others. Of the 35 cases, 3 died, but not, it is claimed, from typhoid. In the first, a vulvo-vaginitis extended to the large intestine and bladder, which were found in a state of diphtheritic inflammation. Of the other two, the first died of croupous pneumonia of the right upper lobe; the second of double bronchopneumonia and tracheal diphtheria. The claim that these deaths were not due to typhoid fever is, in my opinion, preposterous, and, therefore, the mortality, instead of being nil, as Götze would have it, is about 9 per cent. This is small, but the cases are too few to warrant any deductions under this head. The favorable course pursued by the great majority of Götze's cases would lead one to expect still better results from a more extended use of the drug.

There is a large concourse of testimony to the good effect of naphthalin in chronic intestinal catarrh, the results obtained by Rossbach, Pauli, Pribram, Kraemer, Widowitz, and Wilcox having been invariably good. An extensive experience with this drug during a recent six months' term at the Philadelphia Hospital, enables me to corroborate their statements.

In the *St. Louis Med. and Surg. Journal* for March, 1887, Dr. R. W. Wilcox, of New York, gives his experience with this drug in the treatment of

<sup>1</sup> Centralblatt für Bakteriologie und Parasitenkunde, Bd. ii., No. 21.

thirty-two cases of diarrhoea, most of them chronic. "All the cases were relieved in periods of from one week to two months; generally about ten days were sufficient for a cure." The cases of Wilcox, like my own, were nearly all adults.

Dr. Josef Widowitz<sup>1</sup> has employed naphthalin in thirty-three cases of intestinal catarrh in children, and concludes that in the so-called dyspepsia of children with clay-like stools and vomiting of curds, naphthalin is without effect, while in all other forms of intestinal catarrh in children it deserves the preference over all other remedies. This apparent exception to the beneficial action of the drug is, in reality, none, for the condition referred to is gastric or gastro-duodenal catarrh. Widowitz administers naphthalin to small children in the following formula:

R.—Naphthalin. pur. . . . . 0.30–1.  
Mucilag. gummi Arab.,  
Aq. chamom. . . . . āā 40  
Olei menthæ pip. . . . . gtt j—M.

After shaking well give a teaspoonful every two hours. The amount given during the day should be from 0.3 to 1 gramme.

If one may judge from the practice of those who have employed this drug, their opinions with reference to its dose are very different. For example, the dose employed by Kraemer,<sup>2</sup> whose success with naphthalin has been brilliant, did not exceed one gramme daily. With this amount he speedily cured ten cases of intestinal catarrh which had lasted a year in spite of other treatment. He also succeeded in completely expelling the oxyuris vermicularis in cases which had resisted all the usual vermicides employed both per os and per clysm.

On the other hand, Wilcox believes that the most frequent cause of failure with this drug is due to the use of too small doses, and considers the administration of less than sixty grains daily as a "needless waste of very good medicine." Accurate dosage is certainly not essential to the administration of this drug. It is insoluble, not only in water, but in acids and alkalies, so that it reaches the intestines unaltered and, in fact, appears, for the most part, unchanged in the feces. A minimum part of it is absorbed and appears in the urine partly as such and partly as alpha-naphthol. Although the amount that passes out with the urine is small, its antiseptic effect is so great that, according to Rossbach, the urine of patients who have been taking naphthalin may be kept for weeks, and even months, in a warm place without losing its acid reaction and without decomposition.<sup>3</sup> In accordance with these facts, the internal employment of naphthalin in light chronic

cystitis has been attended with excellent results. In one or two days the cocci disappear, the pus sediment diminishes, and there is marked improvement in the local and general conditions. In severe, chronic, incurable cases, temporary improvement is the most that can be expected, as in a case of tuberculosis of lungs, bladder, and kidneys reported by Rossbach.<sup>1</sup>

With reference to certain unpleasant effects that have attended the administration of naphthalin, Rossbach states that, with the exception of slight burning in the urinary passages lasting only a few days, and fugitive pains in the neighborhood of the kidneys, serious symptoms due to the drug itself were observed in only 2 out of 150 cases. Severe strangury was observed in these 2 cases, both of which were tuberculous. One was in the last stage of pulmonary and intestinal tuberculosis; the other, in whom an inflammation of the prepuce set in on the third day of administration of the remedy, bore it well after it was suspended and resumed in smaller doses. Evil effects from this drug are almost invariably due to the fact that it is impure. A case in point is that of a butcher's powerful apprentice, who, after the third gramme of naphthalin, suffered from severe strangury. An examination of the drug showed that it was impure, being gray instead of white. On the day following, the same patient took seven grammes of a pure preparation without a bad symptom.

While large doses of naphthalin are being administered, the urine is of a dark, even black, color, but this fact is of no evil significance. When administered with ordinary care, the worst that can happen is occasional burning pain in the urinary passages, and to refuse, on that account, to employ in chronic diarrhoea a remedy which has cured many of the most obstinate cases, would be, to quote Rossbach, about as sensible as to banish iodine and potassium iodide from therapeutics because now and then they give rise to acute coryza and palpitation of the heart.<sup>2</sup>

The mode in which naphthalin and other drugs intended to act directly on the intestine are prescribed, is by no means unimportant. Probably the best method of administration is that recommended by Unna. The drug is made into a mass with some fat, such as cocoa butter, which melts at the temperature of the body, and each individual pill is surrounded with a layer of the same substance. They are then coated with a layer of keratin (Hornsubstanz) which is insoluble in the acids of the stomach. The keratin is applied to the pills in solution in ammonia, but before this it is digested in an artificial gastric juice to free it from substances which, but for this process, would be dissolved in the

<sup>1</sup> Jahrbuch für Kinderheilkunde, Bd. xxvi Hefte 3 und 4, 1887.

<sup>2</sup> Berlin. klin. Wochenschrift, Jan. 18, 1886.

<sup>3</sup> Einfluss des innerlichen Naphthalingebräuses auf die Harnfällniss. Rossbach, Berlin. klin. Wochenschrift, Nov. 17, 1884.

<sup>1</sup> Loc. cit.

<sup>2</sup> Berlin. klin. Wochenschrift, April 6, 1885.



stomach. The keratin coating of these pills is dissolved by the alkaline fluids of the small intestine and their fat is saponified so that the remedy is set free to exert its local action. Unna has employed in this manner tannin in intestinal catarrh and ext. filicis maris in cases of tapeworm, with good results, and recommends that astringents and styptics be thus administered, especially in intestinal hemorrhage.<sup>1</sup> Dr. F. Krämer, of Munich, has employed these pills and thinks that by this mode of administration many of the unpleasant effects attendant upon the use of naphthalin are avoided.

Probably the most common mode of administering naphthalin is in gelatine capsules. It is important, therefore, to remember that gelatine capsules should not be given to a patient who is taking alcohol, as they are rendered insoluble by that substance. Tannic acid has the same effect. This subject is referred to in an editorial in *The Southern Practitioner* for September, 1886, in the course of which the writer mentions the fact of a physician having prescribed tannic acid in gelatine capsules. Gelatine capsules are not only insoluble in a stomach which contains alcohol, but also in one that is suffering from the effects of alcohol. "When the stomach is inflamed and irritable, following excess in the use of spirits, medicines should not be given in capsules (gelatine)." "Neither chloral nor morphia should ever be given in this form to inebriates; it is useless."<sup>2</sup>

**THYMOL.**—In *THE MEDICAL NEWS* of September 3, 1887, I published my experience with thymol in the treatment of twelve cases of typhoid fever. My attention was first called to this drug by Martini's elaborate article in the *Annali Universali di Medicina e Chirurgia*,<sup>3</sup> February, 1887, and I was induced to publish my observations with it, not only because they were corroborative of Martini's statements, but also because they were confirmed by my colleague, who succeeded me at the Episcopal Hospital and who continued to employ the drug. Since that time I have used thymol in eight additional cases of typhoid fever and in a large number of cases of diarrhoea, acute and chronic. With reference to the former I have only to quote from my article in *THE MEDICAL NEWS*: "The favorable effect of the drug was evinced by a steady descent of the temperature, by a gradual diminution in the daily number of stools, by the absence of mental excitement, and, most conspicuously, by the clean, moist tongue presented in every instance." In the series of twenty cases there has been one death which was caused by one of the rarest events in the course of typhoid fever—rupture of the spleen.

That thymol when taken *per os* exerts an antiseptic action upon the intestinal contents, is proved beyond doubt by the fact that, during its administration, phenol disappears from the urine. "This substance, one of the most constant products of intestinal putrefaction, is eliminated, for the most part, by the urine, where it is found even in health, and experimental therapists regard its amount in that fluid as a test of the effect of an intestinal antiseptic."<sup>1</sup>

The symptoms known as "typhoid" are common to a number of diseases and their distinct amelioration after the administration of an intestinal antiseptic is strong evidence in favor of the view that they are largely due to poisoning from absorption of products of intestinal putrefaction. On account of its great insolubility, a property upon which its value as an intestinal antiseptic largely depends, thymol must be prescribed in pill or capsule. One of the best excipients for thymol is medicinal soap. As to the dose, my practice has been to give from 30 to 40 grains in twenty-four hours—two  $2\frac{1}{2}$  grain pills every three or four hours, although much larger quantities may be given with perfect safety and, perhaps, with still better results. I have given thymol to all the cases of diarrhoea, acute and chronic, under my care during a six months' service at the Philadelphia Hospital, and, excepting a few cases of intestinal tuberculosis, with invariably good results. I regret that I cannot obtain the number of these cases in time for publication. To those familiar with the hospital in question, it is scarcely necessary to say that my opportunities for testing the drug were great.

**MERCURY.**—As I have no present intention of writing a treatise on antiseptic medicine, I will neither refer to the various modes of administering mercury nor discuss the question how far its beneficial effect, in general, may be of an antiseptic nature, but will simply give my experience of its employment in the treatment of erysipelas.

The evidence that erysipelas is a local disease due to a microorganism is overwhelming, but, if I may judge from a recent discussion in a Philadelphia medical society, it has not yet come to the knowledge of some of the most prominent members of our profession. I will, therefore, briefly recapitulate the result of an investigation of the subject.

It has been thoroughly demonstrated by Fehleisen and others that erysipelas is caused by the presence of a living organism, a micrococcus, in the lymphatic vessels of the skin. This organism, which is usually observed in the form of chains or strings of beads, and is, therefore, known as a streptococcus, has been isolated by successive cultures and inocu-

<sup>1</sup> For description of these pills see article by Pribram, *Wiener med. Presse*, February 1, 1885.

<sup>2</sup> *Medical Record*, January 15, 1887.

<sup>3</sup> Dell'efficacia del timolo nella disinfezione intestinale.

<sup>1</sup> Editorial in *THE MEDICAL NEWS* on Intestinal Antisepsis, June 11, 1887.



lated into rabbits with the result of giving them an attack of erysipelas. The animals inoculated were nine in number, and of the nine, eight had a well-marked attack of the disease, starting from the tip of the ear in which the inoculation was made. The period of incubation—*i. e.*, the time between the inoculation and the first signs of inflammation, varied between thirty-six and forty-eight hours. Denucé, a French observer, has repeated these experiments upon six animals, five rabbits and one dog, with positive results in every case. Such evidence would be accepted by most individuals as sufficient to prove the dependence of erysipelas upon a micro-organism; but, Fehleisen has gone a step further, and inoculated seven human beings. He did this on the ground that it was not only for the benefit of science, but for that of the individuals themselves, although it does not appear that they were consulted on this point.\* It has long been observed that chronic eczematous affections, glandular swellings, lupus, and multiple sarcomatous tumors have disappeared after an attack of erysipelas, and it was upon individuals afflicted with such diseases that the experiments were made. All but one of these experiments were successful from the standpoint of experimental pathology, but the therapeutic results hardly warrant the addition of the streptococcus of Fehleisen to the Pharmacopœia. In fact, a woman forty years of age, with scirrhus of the breast, who was inoculated with erysipelas by Janicke and Neisser,<sup>1</sup> died four days after the operation. It was a satisfaction to these experimenters to observe at the autopsy that the micrococci artificially introduced had penetrated the cancer cells and destroyed them in large numbers. The remedy, however, if such it can be called, was undoubtedly more malignant than the cancer itself.

The above facts are quite sufficient to prove that erysipelas is a local parasitic disease, and to justify a local germicidal method of treatment. A treatment based on these views of the nature of erysipelas was first recommended by Hueter. It consisted in the subcutaneous injection of a two per cent. solution of carbolic acid, manifestly with the object of destroying the parasite. Its success was not striking, and an attempt to improve it was, therefore, made by Dr. Kühnast, of Freiburg, who concluded from a study of three cases that multiple scarification and the application, with rubbing, of a five per cent. solution of carbolic acid, were the best treatment yet devised. This may be true; but, if so, there are numerous exceptions to the rule. In the first place, this method cannot be applied to that part of the body—the face—which is the most common site of erysipelas, on account of the danger of subsequent scarring. Secondly, it is so painful that the opera-

tion must be performed under ether. Finally, in the case of children and weakly individuals its upholder recommends that boric or salicylic acid be substituted for carbolic. Surely the objections to this treatment are so great that it can never come into general use.

Thinking that the want of success attendant upon the subcutaneous injection of carbolic acid might be due to the inherent inefficacy of that drug, I have lately been treating erysipelas with hypodermatic injections of the bichloride of mercury. My reason for employing this salt in preference to corrosive sublimate is that the former is compatible with cocaine while the latter is not. A hypodermatic injection of corrosive sublimate is so painful that few will consent to its repetition, while the bichloride, as I have employed it, is comparatively painless. The following formula is the one I am accustomed to use:

R.—Hydrarg. bichlorid. . . . . grs. ij.  
Cocain. hydrochlorat. . . . . grs. iv.  
Aquæ destillat. . . . . ℥ss.—M.  
Fifteen minims to be injected beneath the skin.

I have made about two hundred injections of this mixture in cases of syphilis and erysipelas, always using the dose above mentioned, and have never seen any untoward constitutional symptoms from it, beyond a momentary faintness which I attributed to the cocaine. Several of the patients were delicate women.

I have treated ten cases of erysipelas capitis<sup>2</sup> with injections of the bichloride, and without entering into details I may state that when the disease is beginning, for example, at the side of the nose and extending toward one or both cheeks, this treatment tends to abort it. It is of great importance that the injection be made, not into the inflamed patch but a little beyond its border.

Erysipelas, from a pathological standpoint, consists of two stages. During the first there is an accumulation of micrococci in skin which is apparently healthy. During the second there is a displacement of the micrococci by out-wandered white cells which dispose of the former by incorporating them into their substance so that under the microscope they present a granular aspect. In order, therefore, to abort an attack of erysipelas the injection must be made in the apparently healthy skin at least one-half inch beyond the advancing border of inflammation. I have seen at least three cases of erysipelas which were aborted by the treatment above outlined. These, all hospital cases, were seen at an early period of the disease, while, in the others, it was widespread at the time of admission. I do not consider this treatment effectual after the disease has lasted more than forty-eight hours. It is a singu-

<sup>1</sup> Centralblatt für Chirurgie, 1884, p. 401.

<sup>2</sup> My thanks are due to Drs. Atlee and Dercum for their assistance in carrying out this treatment.

lar fact that in the majority of my cases, the injections of the bicyanide gave rise to abscesses. I consider the fact singular because the substance injected is a powerful antiseptic, and because I have given about one hundred and fifty of the same injections to two women with syphilis, without the slightest suppuration ensuing. In using the injections strict antiseptic precautions were employed: among others the needle of the hypodermatic syringe was heated in a spirit lamp.

The following abstract will serve as a sample of those cases treated at a comparatively early stage:

John H. W., æt. fifty-one years, admitted April 19, 1888, with erysipelas in both cheeks, but more extended on left side. The attack began four days ago at the site of a recent cicatrix resulting from an injury received about four weeks previously. Febrile reaction was slight, the temperature at evening being 100°. The urine was free from albumen. Fifteen minims of the bicyanide solution were injected into each cheek beyond the border of the inflammation.

20th. The cheeks are not so much inflamed and the inflammation has not extended. Two injections were given, both on the left side; one in the temporal region, the other in the neck.

21st. The inflammation is gradually subsiding in the cheeks and *has not extended its area*. The temperature fell to normal on the 22d, and did not subsequently rise above 99°. The man was discharged from hospital on the 30th of April.

In another case, seen when the inflammation had not lasted more than twenty-four hours and involved only a small area about the ala nasi, one injection effected a cure.

Certain facts seem to show that the micrococcus of erysipelas develops most rapidly when the part affected is exposed to the air; or, rather, this is an inference from the effects of a treatment which excludes the air from it. For example, Mr. Barwell, of Charing Cross Hospital, has treated erysipelas by the application of white lead paint, with the result of speedily relieving the pain and reducing the fever; the patient rapidly recovering. W. Otto, of Germany, following the suggestion of Barwell, has excluded the air with a mixture of two parts wax, twenty parts of "Siccativ," and one hundred parts of linseed oil varnish ("leinölfirniss"). His cases, five in number, all did well, the disease in no case lasting longer than ten days.

One of the latest remedies proposed for erysipelas is ichthyol,<sup>1</sup> which is a yellowish-brown oily substance obtained by distilling a bituminous matter found in the Tyrol, and composed of the fossilized remains of fishes and marine animals. It is used in the form of the sodium or ammonium sulph-ichthyo-

late. Von Nussbaum claims that this substance will abort erysipelas, but it did not do so in the only case in which I gave it a thorough trial. The course pursued by this case was, however, remarkably favorable. Von Nussbaum supposes that ichthyol alters the tissues in such a manner as to make them an unfit medium for the growth of the parasite. It is, however, quite as likely that both it and the white paint, as well as the liniment used by Otto, act by excluding the air. Whether this be the case or not, such measures are probably antiseptic in their action, although inferior in this respect to a method such as that I have described and employed, which brings the germicide in direct contact with the germ.

The lack of time and space forbids a further consideration of this interesting subject. Otherwise, under the head of intestinal antiseptics, I would have referred to some interesting facts concerning the action of cotoin, salol, and bismuth salicylate.

In conclusion, I will merely refer to certain observations which not only show that microorganisms may subserve some useful purpose in the economy, but convey the hint that, by taking advantage of their opposing tendencies, we may yet compel them—the germs of fermentation and putrefaction—to play the rôle of antiseptics.

The first set of observations to which I refer are those of Rietsch.<sup>1</sup> In this investigation cultures of the microorganisms of cholera asiatica, of typhus, and of the staphylococcus aureus in 2.5 per cent. peptone solution, were precipitated with alcohol. The precipitate was separated by filtration, washed repeatedly and dried, and the powder thus obtained was tested with reference to its power of digesting albumin. The result was that neither the tubercle nor the typhus bacilli were capable of digesting fibrin, either in alkaline or neutral solution. On the other hand, the cholera bacillus and the staphylococcus aureus, in neutral solution, digested fibrin and the resulting fluid gave the reaction of peptone. In weak alkaline solution the fibrin was also attacked, and in neutralizing with HCl, a precipitate took place which gave the reactions of syntonin and globulin. The digestive capacity of these bacteria, thus demonstrated, had already been suspected on account of the liquefaction of the gelatine in which they are sometimes cultivated.

The second set of observations are those of Hirschler,<sup>2</sup> who found that in mixtures of albuminoids and carbohydrates, the bacteria which first develop are invariably those that decompose the latter. For example, in milk, notwithstanding the presence of numerous casein-decomposing bacteria, the acid fer-

<sup>1</sup> Contribution à l'étude des ferments digestifs sécrétés par les bactéries. Journal de Pharmacie et de Chimie, 1887, 1 Juillet.

<sup>2</sup> Quoted by Escherich—Beiträge zur antiseptischen Behandlungsmethode der Magen-darmkrankheiten des Säuglingsalters. Jahrbuch für Kinderheilkunde, Bd. xxvii. Hefte 1 und 2, 1887.

<sup>1</sup> See paper by Dr. Edward Martin, in Journal American Medical Association, 1888.

mentation first sets in. In such cases the withdrawal of carbohydrates and the substitution of a purely albuminoid diet is indicated. On the other hand, in cases of putrefaction of albuminoids, with offensive stools, all proteids are to be temporarily withdrawn and carbohydrates substituted. The acid fermentation of the latter is the result of bacteria which are inimical to those causing the horribly offensive stools. These most suggestive facts lead directly to the belief that the time is not far distant when what we now somewhat vaguely speak of as a well-regulated diet will be one selected not exclusively with reference to the nice adjustment of its proteids and carbohydrates, but also with a view to the mutual relations of the minute organisms which subsequently develop within it.

### SUBGLOTTIC LARYNGEAL TUMOR.<sup>1</sup>

BY E. FLETCHER INGALS, M.D.,  
OF CHICAGO.

CARTILAGINOUS tumors of the larynx are so rare that I believe the report of a case which, although at present incomplete, seems in a fair way to be cured by endolaryngeal treatment, will be of general interest.

At the New York meeting of the American Laryngological Association in 1884, Dr. Morris J. Asch<sup>2</sup> presented the history of a case of laryngeal echondrosis together with a *résumé* of the literature of the subject. He cites eight cases besides his own, only two of which were accurately diagnosticated and treated during the patient's lifetime, and only one of these had been treated by endolaryngeal methods.

By consulting the library of the Surgeon-General's Office at Washington I have been unable to find records of any other cases excepting one of immense fibro-enchondroma of the hyoid bone and larynx which was skillfully removed by Dr. Azzio Caselli<sup>3</sup> twenty-four hours before the patient's death. This, however, should hardly be included with laryngeal growths, although at first it seemed to spring from the outer surface of the thyroid cartilage.

Dr. Asch's case, in which the tumor grew from the upper part of the thyroid cartilage, and Stoerk's case, in which it occupied a site at the base of the left arytenoid and vocal process, are the only ones that have been successfully treated by endolaryngeal means. Virchow says<sup>4</sup> that from the thickness and hardness of these tumors "they cannot be removed *per vias naturales*."

In the case which I have to report the tumor was seated below the glottis, and although a cure has not

been effected, four applications, made at intervals of from four to six weeks or more, caused a diminution from its largest dimensions (about the size of a split cherry) to one-tenth of that size, and I feel confident that from two or three more applications it would have been entirely destroyed; therefore I feel justified in recommending a careful trial of the treatment in similar cases. The history is as follows:

Mr. X., æt. twenty-four, commercial traveller, came to me July 24, 1886, complaining of almost constant hoarseness which dated from exposure in a tornado about a year previously. His general health was perfect and there was *positive evidence of no specific taint*. The vocal cords were slightly congested, and at about the middle of the left cord there was a small conical outgrowth about three millimetres in diameter. In the subglottic region just below the anterior commissure I found a small, yellowish, somewhat conical tumor, measuring, as nearly as I could estimate, four millimetres in thickness at its highest part and six or seven millimetres across its base. Its surface was smooth but slightly nodular, and its base occupied partly the inner surface of the thyroid cartilage and partly the inner surface of the crico-thyroid membrane. Other portions of the larynx were normal.

A solution of sulphate of zinc was applied by spray to the larynx and an astringent spray was ordered for daily use by the patient. This was continued for about four weeks, when I again saw the patient. There had been little or no improvement.

At that time, as a forlorn hope, I directed iodide of potassium to be taken in doses of from five to fifteen grains three times a day. I saw the patient only twice during the next month, and made no further local applications. He continued to take the iodide of potassium in doses ranging from ten to twenty grains t. i. d. for eight months, but during the last six weeks previous to his fifth visit to my office in July 15, 1887, he had taken no medicine and had not used the spray. The cartilaginous tumor had increased in size so that, as near as I could estimate, it was six millimetres in thickness and fully a centimetre in diameter at its base. The outgrowth had disappeared from the vocal cords and the congestion had subsided.

At this visit, now fourteen months ago, I decided to suspend all other treatment and try the effects of cauterization with chromic acid. I anesthetized the larynx with a ten per cent. spray of cocaine and then applied the caustic accurately to the whole surface of the tumor until it appeared of a uniform brownish-yellow color. This I succeeded in doing, without touching surrounding parts, though shortly afterward I found that the diffusion of the acid had tinged the anterior half of the vocal cords of a yellowish color.

Six days later I found the larynx highly congested and I then applied a spray of a thirty-grain solution of sulphate of zinc. I did not see the patient again until the end of a month, when I found the tumor materially reduced in size. I again applied the caustic in the same manner.

He returned again at the end of two months,

<sup>1</sup> Read at the American Laryngological Association, in Washington, September, 1888.

<sup>2</sup> Trans. Amer. Laryngological Association, 1884, p. 66.

<sup>3</sup> Ann. Univ. di. Med. e chir., 1880, ccliii. pp. 504-516.

<sup>4</sup> Virchow, Path. des tumeurs, vol. i. p. 442.



when I find from my notes that his voice was perfect and as a result of two applications of chromic acid the growth had diminished to two-fifths of its former size. Owing to the patient's business engagements the tumor was not cauterized at this time, but two months later, December 22, 1887, I cauterized it again, and again two months later I repeated the treatment. One month later, March 15, 1888, I found the tumor diminished to about one-tenth of its former size. On this date I made the sixth cauterization.

I did not see the patient again until the 7th of August, about five months, when the tumor appeared to me somewhat larger than at the last treatment, or about one-fifth of its largest size. I again cauterized it with chromic acid. I saw the patient once more at the end of a month and found that the growth had been reduced about one-half by the last application. He was usually hoarse for three or four days after each treatment, therefore, because of his business engagements, further treatment was postponed until the end of September.

Dr. J. E. Rhodes, who has seen this case with me two or three times, concurs in my belief that the treatment would speedily eradicate the growth if two or three applications could be made at intervals of three or four weeks. I expect to follow this course the present fall and hope to be able to report a perfect cure.

In making the applications of chromic acid I used an aluminium wire on the end of which a small amount of the acid was fused. Over this wire I slipped a section of small rubber tubing which had been cut away at its lower end to expose the acid in front. The section of tubing was made secure by tying it with a silk thread, which was extended along the wire to the handle so that there could be no possible chance of its dropping off. This I have found the simplest and most convenient instrument for applying caustics to the larynx. The rubber tubing protects the surrounding parts better than any other device I have seen. The instrument is simple, it may be bent in any direction, it is easily cleaned, and it does not get out of order.

70 STATE ST., CHICAGO.

### HEART WITH THREE CAVITIES.

#### *Partial Transposition of Abdominal Viscera.<sup>1</sup>*

BY M. HOWARD FUSSELL, M.D.,  
OF MANAYUNK, PHILADELPHIA.

LOUISA D., aged twenty-one months. Parents healthy; had one other child, which died of summer complaint, aged two months. Louisa was born September, 1886, after a very easy labor, weighed about five pounds, and was apparently perfectly healthy. No cyanosis except that common to infants immediately after birth. It nursed and rested well,

and I left it at the end of two weeks, having no idea of its serious malformation.

At the age of three months the child was brought to me, with the statement that she continually "grunted," giving the impression to those around that her clothing was too tight. Her appearance was quite normal. On examination the "grunt" was found to resemble closely the expiratory moan of pneumonia. Respirations not markedly accelerated; pulse regular and not over-rapid. On auscultation an exceedingly loud double blowing murmur was heard, with greatest intensity in the mitral region, but conducted equally over the entire area of both chests. The heart was not markedly hypertrophied. It was impossible to decide whether the murmur had its origin at the tricuspid or mitral valves. There was no cyanosis and no oedema.

Thinking the moan came possibly from the overburdened heart, the little patient was put on half drop doses of tincture of digitalis, with the result of stopping the moan for several months.

During the spring and summer following the patient had many attacks of bronchitis and diarrhoea, but she grew fairly well and cut the usual number of teeth at the proper periods. She walked at twelve months. It was noticed now, however, that she began to fail in strength, and though she would take nothing but the breast it was thought best to wean her, and now began the real trouble. It was only by forcing that she would take milk, and she would eat nothing but sugar, clear starch, and dirt. She would eat ordinary starch by the handful, and whenever she could get near any earth eat it as so much sugar, and would cry lustily whenever she was taken away from the dirt. Gradually she ceased to walk, and finally would not stand alone. She was tempted by every imaginable thing, but would eat absolutely nothing but milk, sugar, starch, and dirt.

On December 12, 1887, I was called to see her on account of a bad cough. This at first promised to be one of her frequent attacks of bronchitis. However, her temperature rose to 103° F., pulse 160, regular, and respirations 80 per minute. Consolidation of right base developed. There was characteristic blowing breathing over the whole lower right lobe. The child had pneumonia, and, contrary to my faintest hope, made a good recovery and appeared better than she had for a year; she even began to walk a little, and lost her desire for dirt and would eat very slightly of cracker, but still clung to her milk, sugar, and starch. Her heart had gradually grown. After her attack of pneumonia I find the following note: Præcordia bulging, apex beat beyond the nipple line; dulness from mid-sternum to beyond the nipple line. A loud double murmur over the whole chest. Liver dulness extends below the umbilical line.

<sup>1</sup> Read before the Pathological Society of Philadelphia.

The patient did well until the beginning of May of the present year, when I was called, and found her propped up, the subject of orthopnea, countenance livid, finger-nails extremely blue, heart's action irregular, breathing labored and irregular, chest full of mucous râles, no œdema of the extremities. The child was the picture of one suffering from heart failure. I thought the end had certainly come; but under a free use of digitalis and nitroglycerine she became quite comfortable, and the cyanosis disappeared almost entirely for nearly two weeks, at the end of which time the right hand and foot began to swell gradually, general anasarca took place, and the patient gradually failed, dying with extreme suffering on June 18th.

*Post-mortem* thirty-six hours after death. Dr. George Dock, of Philadelphia, kindly made the section. The child was small for the age of twenty-one months. There was œdema of the extremities and face, and the belly protruded by what proved to be ascitic fluid.

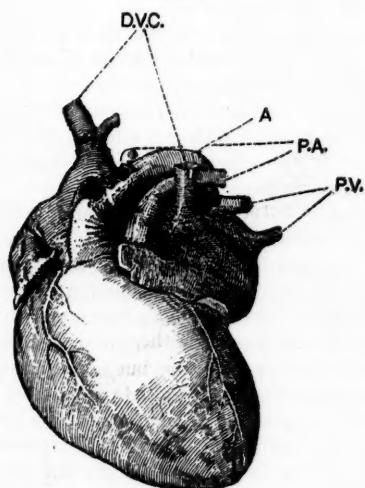
*Heart.*—On opening the chest the heart was seen occupying almost the entire anterior portion of the chest. The auricle was greatly distended. The

While in this distended condition the auricular portion was seen to be of much greater size than the ventricular portion, at least half as large again (Fig. 2). The right ventricular portion was much more developed than the left, the right ventricle evidently forming the apex (Fig. 1).

The aorta arose to the right of the pulmonary artery; the ascending and transverse portion of the arch was dilated to at least twice its original size (Fig. 1). The ascending vena cava entered the auricular cavity far to the left and posteriorly. The descending vena cava was absent, its place being supplied by the two innominate veins, the right entering about the position of the superior cava, the left entering the left auricular portion in the anterior part (Fig. 1).

The pulmonary veins were normal in position and number.

FIG. 1.



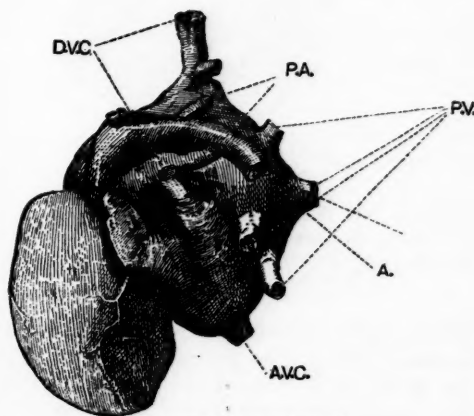
Anterior view of heart.

- D. V. C. Descending vena cava (innominate veins).
- A. Aorta.
- P. A. Pulmonary artery.
- P. V. Pulmonary veins.

ascending vena cava passed up on the left side of the spinal column and apparently entered the left auricle. After noting the anomaly, the heart and lungs were removed entire and dissected at leisure.

The entire heart was much hypertrophied. The auricles and right heart were in a state of extreme distention, giving a typical picture of heart failure.

FIG. 2.



Left posterior view of heart.

- D. V. C. Descending vena cava (innominate veins).
- P. A. Pulmonary artery.
- P. V. Pulmonary veins.
- A. Aorta.
- A. V. C. Ascending vena cava.

The heart was opened by making an incision in the pulmonary artery and following that vessel into the right ventricle. The wall of the ventricle was half an inch thick and filled with a moderately firm clot. Its cavity had three outlets, viz.: the aorta, the pulmonary artery, and the auriculo-ventricular orifice. The pulmonary orifice lay close to the septum to the left of the aorta, and was guarded by two healthy semilunar valves. It was much contracted by thickening of the ring, was of triangular shape, and of about the calibre of a crow-quill (Fig. 3).

The aortic orifice was to the right of the pulmonary and would easily admit the tip of the little finger—it was protected by three valves (Fig. 3). The auriculo-ventricular orifice was placed posteriorly to the above two. It admitted the tips of three

fingers. The valves protecting this orifice were evidently incompetent. The right half of the ring was protected by a large valve, which was attached to the apex by a papillary muscle. Posteriorly, and joined

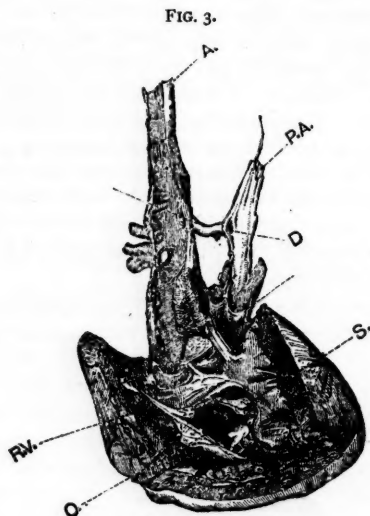


FIG. 3.  
A. Aorta.  
P. A. Pulmonary artery.  
D. Ductus arteriosus.  
S. Edge of septum.  
O. Auriculo-ventricular orifice.  
R. V. Right ventricle.

to the posterior edge of the above valve, is a nodular formation, evidently an attempt at a second valve. The remaining portion of the ring was perfectly smooth and free from any valvular attachment. It is formed by the free upper edge of the ventricular septum. From this portion of the ring a muscular band three-eighths of an inch wide runs to the septum.

The free edge of the large valve was the seat of nodular thickenings. The ventricular septum was imperfect, connecting with the left ventricle by means of a small semilunar opening at the upper edge. The septum was about one-fourth of an inch thick. The left ventricle was abortive, its cavity holding scarcely more than a drachm. Its walls were about half the thickness of those of the right ventricle. There was no vessel given off from this cavity, the only openings being the auriculo-ventricular and the small opening into the right ventricle. The auriculo-ventricular opening admitted the index finger; the anterior portion was free from valvular attachment and was formed by the free edge of the ventricular septum in common with the free portion of the ring on the other side. The remainder of the orifice was protected by a valve having its anterior attachment at a point in common with the

anterior attachment of the valve on the right side and the posterior attachment in common with the abortive valve on the left; it was attached to the walls by chordæ running to the papillary muscles, one on the anterior, the other on the posterior wall.

Another and perhaps the proper description is, that there is but *one* auriculo-ventricular orifice which is common to the right and left ventricles, and protected by valves as described above, the two ventricles communicating by a small semilunar opening in the upper part of the septum.

On opening the auricular portion, the septum was found wanting, and there was no trace of foramen or valve. The walls of the cavity were one-eighth of an inch thick. The capacity was sixty c. c. There were two complete auricular appendages. The common auriculo-ventricular orifice was well seen at the bottom of this cavity.

The ductus arteriosus arose from the left pulmonary artery and was patulous.

*Lungs*.—Right not fully divided into its three lobes, and there was an attempt at a fourth lobe. Left, the entire lower lobe was consolidated apparently by an infarct, but no embolus was found.

The *liver* was a typical nutmeg, almost round, of monstrous size, occupying half the abdominal cavity, exceedingly hard.

The *oesophagus* passed to the right of the spinal column, entering the cardiac end of the stomach in the right hypochondriac region.

The *spleen* consisted of three distinct portions curiously nodulated with an attempt at a fourth division. It lay attached to the stomach in the right hypochondrium.

The *stomach* was entirely on the right side under the right lobe of the liver, the pylorus lying in an almost normal position, but pointing forward, and the cardiac end lay along the column posteriorly on the right side. The duodenum ran anteriorly.

*Pancreas* short and round, with the head pointing anteriorly; duct presumably opening into the ductus, commences about one inch from the pylorus.

*Cæcum* lay in right iliac region, but was anterior.

*Colon* ran half way up on right side, crossed the column, and lay in folds in the right iliac region.

The *kidneys* were cyanotic.

This is the fourth specimen of malformed heart presented to the Philadelphia Pathological Society, and the third of its class. The first was presented by Dr. Darrach, in 1858, and is reported in vol. i. of the *Transactions*. Save that the orifice of the pulmonary artery was entirely obliterated, it was a counterpart of this specimen. Dr. Rex presented a malformation in 1874, vol. v., which was doubtless of the same class, but the aorta was connected with both the right and left ventricles. Dr. Eskridge presented a specimen in 1883, but the malformation was almost exclusively in the right side, being an



abnormal septum in the right auricle, the openings and vessels being normal.

Practically, the heart which I have described consists of two cavities, only the one ventricle and one auricle taking any active part in the circulation.

However, I think it must be classed with that more common form of malformations in which there is an attempt at the four cavities, arrest of development taking place at a later period of development.

When the arrest of development takes place very early there are only two cavities or perhaps three, but almost universally there is but *one* vessel leading off from the common ventricle, arrest having taken place before the division of the primary artery.

In the class of which I think this forms one, there are two arteries, two auricular appendages, with a more or less complete formation of the septa of auricles and ventricles. The orifice of the pulmonary artery is always more or less contracted, sometimes, as in Darrach's case, entirely obliterated. The aorta may arise to the right of the pulmonary artery, as in this case, and always has connection with both ventricles, the septum ventriculorum being deflected usually to the left. Hunter supposed these defects were caused by some obstruction occurring in the pulmonary artery in early foetal life, while the septum of the ventricle is incomplete, necessitating a flow of blood into the left ventricle, preventing a separation of the two ventricles, causing a deflection of the septum to the left and a dragging of the aorta to the right.

Meckel concludes that incompleteness and deflection of the septum are primitive defects, the blood finding a free outlet from the right ventricle through the aorta; the pulmonary artery becomes more or less abortive, and the orifice is contracted during the process of development.

Peacock believes that the defects are due partly to the arrest of development, by which the earlier position of the aorta is retained, and partly to obstruction of the pulmonary orifice and consequent distention of the right ventricle, causing the septum to be deflected to the left.

189 GREEN LANE, MANAYUNK.

#### **SUCCESSFUL TREATMENT OF A CASE OF EXOPHTHALMIC GOITRE BY SULPHURIC ACID.**

BY WM. E. MAGRUDER, M.D.,  
OF OLNEY, MARYLAND.

Six years ago I had an obstinate case of exophthalmic goitre in a lady about twenty-two years of age. This case presented the usual symptoms of that disease, viz.: enlargement of the thyroid gland, with decided pulsation, protrusion of the eyeballs, palpitation of the heart, frequent pulse (120 to 140), anæmia, etc. I treated the case for more than two months with very little improvement in the condi-

tion of my patient, using the various remedies usually prescribed in that disease, such as digitalis, iron, quinine, aconite, strychnine, ergot, belladonna alone and in various combinations, and electricity, both galvanic and faradic. I then gave aromatic sulphuric acid in combination with digitalis and ergot, and found a decided improvement in a very short time. This combination, however, soon disagreed with her stomach, and I then gave the acid alone (20 gtt. every four hours), and the improvement continued.

After beginning the use of the acid, the pulse became less frequent, the pulsation soon ceased in the thyroid gland, and the enlargement gradually decreased, as did also the protrusion of the eyeballs. For about one year there was a tendency to a recurrence of the disease, but it always yielded promptly to the acid, and so marked was the relief afforded that the patient resorted to its use whenever she felt a return of the symptoms. She is now perfectly well.

I have never seen any mention of this treatment for this disease, and it may not act in another case as it did in the one reported above, but it is certainly worth a trial. I have had no other case since upon which to test the treatment, and therefore have hesitated about reporting it, but I hope others may try it and publish their results.

This treatment was suggested to my mind by reading in *Clinical Observations on Functional Nervous Disorders*, by C. Handfield Jones, the following remarks:

"Sulphuric and nitric acids have certainly some claim to be regarded as *toners of the vasomotor nerves*. They cannot be supposed, of course, to act in their original form on the parts they influence, as their quality must be lost the moment they enter the circulation. They cannot be mere astringents like tannin. When sulphuric acid restrains a choleraic purging, or colliquative sweating, these effects must surely be produced through the nerves that regulate the arteries of the internal and the external integument. Its special nerve action is attested by the following quotation from Dr. Pereira: 'No remedy is so successful in relieving the distressing itching, formication, and tingling of the skin as sulphuric acid taken internally.'"

Something to give tone to the vasomotor nerves seems to be indicated in this disease, and the sulphuric acid certainly seemed to have that effect in this case.

#### **MEDICAL PROGRESS.**

**Tuberculosis in Children.**—In an article on this disease in the *Archives of Pediatrics*, for Oct. 1888, JACOBI, with that characteristic clinical acumen which marks this teacher's utterances, deplors the present fashion of feigning contempt for internal remedies. He believes that arsenic is a remedy of great value. The doses must be small. A child a few years old may take two drops of Fowler's solution daily, or a fiftieth or a fortieth of a grain of

arsenious acid for weeks or months in succession. This amount may be divided in three doses, administered after meals, the solution largely diluted. There is no objection to combining it, according to necessity, with stimulants, roborants, or narcotics, and to giving it for an indefinite period, unless the well-known symptoms of an over-dose—gastric and intestinal irritation and local œdema—made their appearance. But they seldom will, particularly when small doses of opiates are judiciously added to them. In almost every case, perhaps in every one, it is desirable to administer it in conjunction with digitalis.

In the vertebrate animal, digitalis increases the energy of the heart-muscle and its contraction; thereby it increases arterial pressure and diminishes the frequency of the pulse. By increasing arterial pressure it favors the secretion of the kidneys, improves the pulmonary circulation, empties the veins, thereby accelerates the flow of lymph and the tissue fluids, and exerts a powerful influence on the metamorphosis of organic material—that is, general nutrition. Besides, what it does for the general circulation and nutrition it also accomplishes for the heart-muscle itself. The bloodvessels and lymph circulation of the latter are benefited equally with the rest.

Thus digitalis, while being called a cardiac stimulant, contributes largely to the permanent nutrition and development of the organ. This effect is not only of vital importance for the economy of the system on general principles, but an urgent necessity in view of the fact that there appears to be a relative undersize of the heart, either congenital or acquired, in cases of phthisis; and there is certainly such a predominance of the size of the pulmonary artery in the young, particularly over the aorta, that the normal succulence of the lung becomes pathological quite readily when the insufficiency of the heart-muscle tends to increase low arterial pressure within the distribution of the pulmonary. The selection of the preparation to be administered is not always an indifferent matter. The infusion and the tincture are not always well tolerated by the stomach; digitalis, not being a soluble alkaloid but a glucoside, is not always reliable in its effects, and not of equal consistency and strength; a good fluid extract is borne well and may be taken for a long time. A child a few years old may take about two minims of the former daily, more or less, for weeks and months, or its equivalent in the shape of the extract (two-thirds of a grain daily); the latter can easily be given in pills, to be taken in bread, or jelly, and combined with any medicines indicated for special purposes, such as narcotics, or nux, arsenic, or iron; the latter to be excluded in all feverish cases, or in all cases as long as there is fever. As long as there is no urgent necessity for a speedy effect, digitalis will suffice by itself; as a rule, it does not operate immediately in those small doses. The addition of strophanthus, sparteine, or caffeine, all of which are speedily absorbed and eliminated, and exhibit their effect rapidly and without the danger or inconvenience of cumulation, will prove advantageous in many cases.

Other medicines have been used in great numbers. Specifics have been recommended, and symptomatic treatment been resorted to. The success of the latter depends on the judgment of the individual practitioner. No text-book or essay can teach more than general principles and their adaptation to the average case, and

the measures to be taken in a number of exceptional occurrences. The indications for the use of narcotics, stimulants, expectorants, and febrifuges will change according to the cases and their various phases and changes. In every case the necessity may arise for antipyrin, anti-febrin, phenacetin, salicylate of sodium, or quinia. It may be necessary to decide the question whether the administration is to be made through the mouth, rectum, or subcutaneous tissue, or how their effects are to be corrected or combined. I have often found that a hectic fever would not be influenced by quinia, or by antipyrin, or salicylate of sodium. But the combination of the first with one of the latter would frequently have a happy effect.

**Fissures of the Tongue.**—These obstinate and painful lesions may be speedily cured, according to SCHWIMMER, by applying the following mixture five or six times daily:

R.—Papayotine . . . . . 2 parts.  
 \* Glycerin,  
 Aquæ . . . . . āā 10 parts.—M.  
 —*Révue de Thérapeutique*, Oct. 15, 1888.

**Glycerine Suppositories.**—Suppositories of glycerine may thus be made: Ten parts of particularly hard, dialyzed stearin soap are dissolved in hot water, the solution mixed with ninety parts of pure glycerine and passed through a steam filter; the filtrate, melted, is divided into one hundred parts and poured into moulds. The suppositories are firm and transparent; as they are hygroscopic, they should be incased in tin-foil. Two sizes may be prepared, one of about 26 grains, another of 38; the former should contain about 24, the latter about 36 minims of glycerine. Dietrich's idea to combine glycerine with soap is most happy and rational, as soap, which has long been used in suppository, is a vehicle which does not interfere with the action of glycerine, but aids it.—*Prager medicin. Wochenschr.*, September 19, 1888.

**Hypodermatic Treatment of Syphilis.**—VOLLERT, of Strasburg, brings forward the succinimide of mercury, given subcutaneously, as of much value in syphilis. It appears to have several advantages over mercury glyco-coll, its solution being much more stable, and the injection being less painful, and causing a smaller amount of infiltration at the seat of puncture, besides which its cost is decidedly less. When properly applied, the injection rarely, if ever, sets up suppuration. According to Prof. Wolff, the best way of operating is to run the needle into the middle of the subcutaneous fat of the buttock, not perpendicularly to the surface, but parallel to it, then to inject the liquid very slowly, gently stroking the swelling formed, so as to distribute and disperse the liquid over a somewhat extensive area. The daily injections are made alternately into the right and left buttocks. The strength of the solution recommended by the author is 2 per cent., corresponding to about 1 per cent. of mercury, so that each Pravaz syringeful contains 0.01 gramme of mercury. The average number of injections given to each patient is about nineteen; in severe cases, however, thirty or thirty-five injections are required. Dr. Vollert has not as yet been able to make any observations on the excretion of mercury by the organism after the treatment;

but, speaking from the point of view of clinical experience, after having given 523 injections to twenty-eight patients, he considers mercury succinimide bids fair to prove a very valuable drug for subcutaneous injection in case of syphilitic disease.—*Lancet*, October 13, 1888.

**Chemical Reactions of the Cholera Bacillus.**—In 1886, POEHL first noticed that cholera bacilli produced a reaction with the mineral acids, which he designated "cholera red." In 1887, BUJWID independently published a similar observation in the *Zeitschrift für Hygiene*. Since then the latter has given the subject a good deal of attention, as at times it may be important for the physician in a given case not to have to make cultures of the bacilli from stools suspected to be choleraic, but to be able to recognize the bacillus by some chemical reaction which can be readily performed. JADASSOHN (*Breslauer ärztliche Zeitschrift*), from his investigations, was unable to indicate which particular acid furnished a characteristic reaction with the cholera bacillus, as other microorganisms behaved similarly under like conditions. After careful studies, Bujwid describes a reaction for the cholera bacillus which he considers characteristic. To a two per cent. sterilized solution of peptone a half per cent. of common salt and bicarbonate of sodium is added to produce an alkaline reaction. This solution is contaminated with the bacillus and placed in the thermostat for twenty-four hours. If to the mass is now added hydrochloric, phosphoric, sulphuric, or oxalic acid a beautiful violet-red color results, prettiest with hydrochloric acid. Several other bacilli (Finkler's, Denecke's, Miller's) give the same reaction, but only after a longer time and in a less pronounced degree. Salkowski believes that the reaction is produced by the indol formed by the bacilli.—*Wiener medicin. Presse*, No. 40, 1888.

#### Emmenagogue Powder.—

R.—Powdered absinth . . . gr. xxxviii.  
Powdered yarrow . . . gr. xxxviii.  
Powdered saffron . . . gr. xix.—M.

Divide in pulvres No. V.

Sig.—One powder each day, for five days preceding the expected menstrual period.

**The Treatment of Lichen Ruber Planus.**—HERXHEIMER (*Berl. klin. Wochenschr.*, No. 37) recommends applications, with a brush, of ten per cent. solutions of chrysarobin-traumaticin, twice weekly, until the eruption has disappeared.—*München. medicin. Wochenschr.*, September 25, 1888.

**Terebene in Bronchorrhœa.**—MARTIN has obtained in bronchorrhœa excellent results from terebene. He mentions one particularly aggravated case of long standing, in which it was given in a mixture containing  $\mathfrak{m}_x$  of gum terebene,  $\mathfrak{m}_x$  of spirits of chloroform,  $\mathfrak{zj}$  of mucilage of tragacanth,  $\mathfrak{zss}$  of syrup, water to  $\mathfrak{zj}$ . This proved most palatable to the patient. Four doses and sometimes five, were given in the course of twenty-four hours. The effect upon the bronchial secretion was immediate, and steadily maintained. The heart also seemed to respond to the stimulant nature of the drug, and its effect upon the atonic and flatulent condition of the bowels and stomach was remarkable. The tongue cleaned, the appe-

tite increased, digestion became comfortable, with consequent increase in general strength. No nerve symptoms were noticed, as was the case when brandy or whiskey was given. From the day the terebene was ordered there was a steady improvement of a most marked character.—*Medical Press*, Aug. 29, 1888.

**For Cough.**—In certain cases of cough in which the paroxysms are frequent and expectoration difficult, the hydrochlorate of apomorphine is highly spoken of by STOCQUART. Very minute doses are generally sufficient, only three or four milligrammes being given during the whole day. It is generally accepted, and cases of intolerance are very rare. When they do occur, they consist chiefly of colicky pains, nausea, and diarrhœa. As the solution of hydrochlorate of apomorphine is an unstable compound, he advises the addition of a few drops of chlorhydric acid, which will insure its preservation and not affect its therapeutical value.—*Journal de Médecine*, September, 1888.

**The Constant Current in Epilepsy.**—DR. NIEMEYER has obtained some successful results in epilepsy, by combining the employment of the constant current to the brain in combination with the internal use of small doses of bromide of potassium. The anode was moved about over the forehead, the cathode being held in the hand; or the anode was fixed on the nape of the neck, while the cathode was moved over the forehead, or applied immovably over the gyri centrales of both sides. The treatment was carried out for ten months, the result being that one patient had no attack for two years and three months; another, who had previously had an attack about every month, had, after treatment, only two fits in twenty-five months; and a third patient, who had been in the habit of having three or four fits a day, remained free for seven weeks.—*Lancet*, October 13, 1888.

**Antiseptic Sponges for Gynecological Operations.**—The sponges are kept in the following solution for twenty-four hours:

R.—Hydrarg. chlorid. corrosiv. . . 1 part.  
Acid. carbolijc. . . . . 5 parts.  
Alcohol . . . . . 60 "  
Aquæ bull. . . . . 500 " —M.

The fluid is then expressed and the sponges dried in the air. After they have been thus disinfected, the sponges may be impregnated with one of the following solutions:

R.—Acid. boric. . . . . 15 parts.  
Aquæ bull. . . . . 500 " —M.

Or

R.—Acid. tannic. . . . . 30 parts.  
Aquæ bull. . . . . 500 " —M.

Or

R.—Liq. ferri chlorid. . . . . 40 parts.  
Aquæ bull. . . . . 500 " —M.

—*Medicin. Chirurg. Rundschau*, Oct. 1; from *Wiener med. Wochenschr.*, No. 32, 1888 (*Journ. de Méd.*, July 29, 1888).



**Treatment of Intra-cranial Abscess.**—CHAUVEL advises early operation, since by the use of antiseptics the dangers are trifling. The symptoms, at best, are exceedingly obscure, but if one has reason to suspect suppuration no time should be lost. The most common seat is in the temporo-sphenoidal lobe, and if treatment directed to the ear alone has failed and the cerebral symptoms are alarming, trephine the mastoid and wait a few days. If no amelioration occurs, the cavity of the cranium is to be opened. The landmarks of the operation are as follows: A horizontal line drawn backward from the external canthus, crossed by two vertical lines drawn one in front and one behind the pinna. The point for opening is to be selected on the horizontal line, midway between the two perpendicular lines. One comes here directly on the squamous portion of the temporal bone, and the only large vessel to avoid is the middle meningeal artery. The abscess is then evacuated and antiseptic rules strictly observed.—*L'Union Médicale*, October 11, 1888.

**Tobacco and Bacteria.**—The popular belief in the germicidal virtues of tobacco-smoke (which we note as being revived in connection with the alleged immunity enjoyed by the cigar-makers of Florida during the recent yellow fever epidemic) has received some confirmation in the scientific researches of Dr. Vincenzo Tassinari, first assistant of the Hygienic Institute of Pisa University.

In a preliminary note on his experiments (*Centralblatt f. Bakteriologie*, Bd. iv., No. 15), he describes the simple apparatus he designed to test the effect on pathogenic organisms of exposure to the fumes of tobacco. The apparatus consists in a chamber formed by two glass funnels placed horizontally, and connected together at their mouths by paraffin. In this chamber is suspended from a loop of platinum a small piece of linen, with the threads of its lower extremity immersed in a culture-fluid containing the microbes. The chamber is connected at one end by a tube with a cigar or cigarette, and at the other, by a tube containing a plug of cotton-wool (to serve as a filter) with the mouth of the experimenter. The smoke as it is exhaled, therefore, thoroughly surrounds the linen soaked in the culture-fluid, and, after the experiment, which lasts from thirty to thirty-five minutes, involving the consumption of from three and a half to four and a half grammes of tobacco, the chamber is opened, and the linen allowed to fall into a test-tube containing fluid gelatine. Control experiments were also, of course, made.

The microorganisms subjected to this treatment included: 1. *Spirillum cholerae Asiaticæ*. 2. *Spirillum Finkler-Prior*. 3. *Bacillus anthracis*. 4. *Bacillus typho-abdominalis*. 5. *Bacillus pneumoniae* (Friedländer). 6. *Staphylococcus pyogenes aureus*. 7. *Bacillus prodigiosus*. The result varied with the variety of tobacco and the kind of microbe, but in every instance there was marked (sometimes very great) delay in the development of colonies in the gelatine as compared with that of organisms dealt with similarly, but without exposure to tobacco-smoke. Indeed, the development of some was entirely prevented. For example, in the third series of experiments cited, in which large Virginia cigars were used, the development of *Bacillus prodigiosus* was delayed for seventy-two hours, that of *Staphylococcus pyogenes aureus* for seventy-three hours, of *Bacillus anthracis* for

ninety-seven hours; whilst of the others, mentioned above, no development of colonies took place after from a hundred and twenty-eight to a hundred and sixty-eight hours.

Dr. Tassinari attributes these results to the chemical action of the ingredients of tobacco-smoke. He proposes to extend his researches more fully, both as regards the effect of different kinds of tobacco upon these and other microorganisms, especially the tubercle bacillus, and to determine the time of exposure, as well as the amount of tobacco necessary to produce the full effect. He hopes also to ascertain what substance or substances are responsible for the germicidal action.—*Lancet*, October 13, 1888.

**Treatment of Diphtheria.**—The three rules to be followed for the successful treatment of diphtheria are, according to RENOU:

To saturate the inspired air with antiseptics.

To feed and tone the patient to the greatest possible degree.

Never to touch the throat with any medicament, and to give internally only alcohol and quinine.

The facility with which this treatment may be applied, especially in the case of children, the certainty and rapidity of absorption, are elements which recommend a thorough trial.—*Bulletin Général de Thérapeutique*, October 15, 1888.

**The Use of Creolin in Ophthalmic Practice.**—GRUNHUT (*Prager medicin. Wochenschr.*, September 26, 1888), using creolin for a period of four months, did not observe the good results which have been claimed for its employment in ophthalmic practice. He used an emulsion of one per cent. and a vaseline ointment of one per cent. The remedy has the disadvantage of causing a burning sensation, lasting generally but a few minutes, though in some cases longer, associated with such severe pain and protracted irritation as, in some cases, to necessitate a liberal use of cocaine. The cheapness of creolin is thus offset by the high price of cocaine. The emulsion must be used fresh, as in the course of a few days the creolin separates as oily particles and the activity of the preparation is impaired. It is conceded that creolin possesses antiseptic properties and diminishes secretion in catarrhal affections of the conjunctiva, in trachoma and dacryocystitis. In the form of an ointment, rubbed once or twice a day on the lids, creolin exerts a useful influence in various forms of blepharitis, especially in the secretory and exoriative forms, though it cannot be said that it possesses any advantage over the ointment of the yellow oxide of mercury. In simple catarrh, even with swelling, better and speedier results may be had from nitrate of silver. Creolin would only be preferred when it was desired to substitute another remedy for silver nitrate. The excellent results claimed by Purtscher and Grossmann in the papillary form of trachoma were not confirmed; nor could more be said of pannus trachomatousus. In cases of keratitis threatening iritis, creolin was not well borne, on account of its irritating influence. Creolin thus plays but a minor role in ocular therapeutics. Its opacity renders it unavailable for operations upon the eye.

# THE MEDICAL NEWS.

## A WEEKLY JOURNAL OF MEDICAL SCIENCE.

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### CALOMEL IN PHTHISIS.

THE observation is somewhat trite that in therapeutics empirical measures of recognized value are, with widening knowledge, often found to have a scientific basis. The present generation of physicians has as little personal knowledge of the indiscriminate use of calomel as of indiscriminate bleeding, and it is fortunate that this is so. This generation, however, knows that there are occasions in which prompt and free phlebotomy means the saving of a life, and, therefore, still carries the thumb lancet in its pocket-case. Not less does the doctor of to-day recognize in calomel, rightly used, an important remedy in certain of the acute infectious diseases. At the same time, its dangers and its uselessness, as once employed, are too well known to permit of anything like a revival of the old methods of prescribing it.

The use of calomel in pulmonary phthisis was common in the early part of the present century. Many authors regarded it as almost a specific remedy in this affection. Among these may be named Delafield (1818), Dessault (1809), Mecker (1822), Critchton (1823), Clark (1836), and others. Trousseau considered calomel useful in laryngeal phthisis where there was no underlying syphilitic cachexia, and where other remedies had failed. Broussais, Andral, and others advised the use of quicksilver in certain forms and at various periods of consumption. Hufe-

land considered quicksilver as much of a specific in scrofulosis as in syphilis.

For a half century the use of mercurials in phthisis seems to have been forgotten. Recently, however, the attention of the profession has been very generally drawn to the anti-parasitic action of the preparations of mercury in the treatment of bacillary phthisis. Auber and Gougenheim (1886) injected corrosive sublimate into lung cavities; Lepine used the same treatment in croupous pneumonia; Barthol and Moritz used mercurial inunctions in pneumonia; Kubassof employed this treatment in the management of consumption as first advised by Plasse. Plasse's work is especially noteworthy as resting, to a certain extent, upon experimental research. He found upon inoculating rabbits with tuberculous matter, that those animals previously treated by mercurial inunctions developed very few tubercles, or escaped altogether. The favorable influence of small doses of calomel upon certain forms of anæmia is well known. Cases are occasionally observed in which the prolonged administration of iron having failed, rapid improvement takes place under a treatment of calomel, with improvement of appetite, relief of habitual constipation, and restoration of the menstrual function. Especially is this method of treatment useful in the anæmia of syphilis, as pointed out by Keyes, and in the anæmia of "scrofulosis" and pulmonary consumption.

Quite recently MARTELL (*Prag. med. Wochenschr.*, No. 25, 1888), and DOCHMANN (*Therapeut. Monatsh.*, September, 1888), have published communications on the important subject of the calomel treatment of tuberculosis. J. C. WILSON, at about the same time, reported some clinical studies in the treatment of enteric fever and pulmonary phthisis by hypodermatic injections of calomel at the recent meeting of the Association of American Physicians in Washington (*THE MEDICAL NEWS*, October 13, 1888).

That calomel administered by the mouth or hypodermatically exerts a favorable influence in certain cases of tuberculous disease, there is no room to doubt. Whether it exerts a specific action upon the local pulmonary lesions, or upon the growth and development of the tubercle bacilli, cannot at present be asserted. With the exception of Wilson, those observers who have published their investigations into this method of treatment since its recent revival, incline to the view that the favorable in-

fluence of calomel is due to the direct germicide action of the mercurial salts. Dr. Wilson regards it as probable that the mercurial salts, even in small amounts, act upon the tissues rather than upon the germs themselves, and suggests that this action is preventive, tending to retard or prevent the splitting up of the complex chemical compounds of the tissues and the production of ptomaines, and that this increased resistance on the part of the tissues, by opposing processes necessary to the growth and multiplication of pathogenic microorganisms, stands in the way of their continuous development. Whether the mercurial salts, administered by the mouth or hypodermatically, enter the circulation in the form of an albuminate of mercury, or in the form of a double chloride of mercury and sodium, has not yet been established. Torsellini (1886) has shown that pepsin in the presence of small amounts of hydrochloric acid greatly increases the solubility of calomel, without converting it into mercuric chloride, and concludes that the solution is the result of a ferment action of pepsin upon the calomel.

#### THE TREATMENT OF FATTY HEART.

DR. FORCHHEIMER's paper on "Fatty Heart," and the discussion to which it gave rise, at the recent meeting of the Association of American Physicians, at Washington (*THE MEDICAL NEWS*, October 6, 1888), brought into strong prominence the importance of the clinical distinction between fatty infiltrations of the heart and fatty degenerations of that organ. The pathological distinction is, as a rule, clear enough. The one is a fat overgrowth in the sub-pericardial connective tissue, in the grooves and furrows of the surface of the heart, and in the fibrous septa of the myocardium. When such overgrowth of fat becomes excessive, its presence interferes with the contraction of muscular fibres, and, consequently, with the nutrition of the heart, the force of which becomes impaired by atrophy of some groups of fibres, and secondary fatty degeneration of others.

Fatty infiltration is due to the causes which produce general obesity, and is associated with that condition. Dr. Forchheimer's expression, "obesity of the heart," well describes it.

On the other hand, fatty degeneration of the heart is a disease of the myocardium. The albuminoid constituents of the muscular fibre are split up, and microscopical particles of fat are deposited in their place. This condition may be caused by any

of the numberless agencies, both constitutional and local, which seriously derange the nutrition of muscular tissue, and is only exceptionally associated, as, for example, in chlorosis, with general obesity. Where fatty degeneration is due to local disturbances of blood supply, as in obliterating endarteritis of a branch of the coronary arteries, the fatty change is usually of limited distribution, and since the unaffected parts of the wall of the cavity retain their normal contractile power, there is danger of the softened spot of degenerated tissue yielding upon stress, and rupture taking place—an accident which is, in point of fact, far from rare.

While the pathological pictures of these two conditions merely touch at their borders, or at most only slightly overlap; their clinical pictures, which alike represent cardiac inadequacy without positive physical signs, are superimposed. The differential diagnosis must, therefore, rest upon the constitutional rather than the cardiac morbid phenomena. The presence of general obesity—and the recognition of the conditions of life favoring fat accumulation will, in the absence of the evidences of the constitutional or local causes of derangement of nutrition, often justify the diagnosis of fatty infiltration; the reverse, that of fatty degeneration.

The diagnosis is, at present, of the highest importance in view of the growing interest and widening use of the dietetic-mechanical method of treating chronic diseases of the heart devised by Oertel, of Munich. While it may be admitted that certain cases of fatty degeneration, such as result from anæmia, chlorosis, or the acute infectious diseases, may be cautiously subjected to this treatment, and that some of them are likely to receive permanent benefit from it; it is obvious that a large majority of such cases, and especially those occurring in the degenerative period of life, are not only unlikely to be benefited by it, save in the most general way, but are also liable to disastrous consequences. On the other hand, the method of Oertel, which is essentially his method of treating obesity, is the method of choice in fatty infiltration. Whatever may be the result of experience in its use in other forms of heart disease; whatever the outcome of the assaults now being made upon it on both sides of the Rhine, we may confidently predict that the combination of a guarded restriction of fluids, a diminished dietary, from which fats and excess of carbohydrates are excluded, and carefully regulated and graduated hill-climbing under well-thought-out rules, to which



the name of the famed professor of Munich has been given, will constitute a permanent acquisition to our treatment of obesity of the heart as of the obesity of the body of which it is a part. The difficulties of diagnosis will always demand extreme caution in advising the use of this method in doubtful cases.

#### THE TREATMENT OF PELVIC ABSCESS IN WOMEN.

AMONG the topics of practical interest discussed at the Congress of American Physicians, the treatment of pelvic abscess in women elicited information of value not only to the obstetrician and gynecologist, but to the general practitioner.

Regarding the etiology of the affection, septic and non-septic causes were recognized. The former commonly arise during parturition, and are a part of puerperal infection; less frequently the gonococcus originates the septic process. The latter are the secondary causes of inflammation of the female genitalia, exposure to cold, and derangement of menstruation. The original focus of inflammation is very commonly the epithelial tissue of the endometrium and tubes, less frequently, the connective tissue of the pelvis. The determination of the time when suppuration occurs is difficult; persistence of the phenomena generally recognized as denoting pus formation for several weeks justifies an operative exploration. The extension of the process may involve the septa and connective tissue of the pelvis very extensively, and spontaneous evacuation may follow, in the direction of least resistance.

Regarding treatment, palliation is rarely successful, except in cases of non-septic origin. The destruction of the focus of infection should be attempted as early as possible, before pelvic tissues are generally involved. In the absence of a fluctuating tumor accessible per vaginam, laparotomy is indicated. Should the abscess be found in a tube, extirpation should be done. If an ill-defined abscess is found, it should be drained with gravity, per vaginam, a tube being generally passed into Douglas's cul-de-sac. Extirpation of the sac of an ill-defined abscess is rarely possible, but is effected by natural processes when drainage is established. If vaginal examination discloses a fluctuating tumor, it should be opened, preferably by uterine dressing-forceps whose tips are sharpened, or by a director. A flexible rubber drain, and antiseptic irrigation will complete the cure.

Piercing the pelvic tissues with an aspirator needle

is injurious, and inefficient for diagnosis; aseptic laparotomy is more certain, and safer.

In cases recognized promptly, and treated efficiently, the prognosis is good, not only for recovery, but as regards the reproductive functions of the patient. Should an abscess be diagnosed, after laparotomy, in the extra-peritoneal tissues, it may be evacuated advantageously by incision parallel to Poupart's ligament.

THE American Public Health Association will convene at Milwaukee, Wisconsin, Tuesday, November 20, at 10 o'clock A. M., and continue four days. The meetings will be held in the Athenaeum Hall.

The following topics have been selected for consideration:

1. The pollution of water-supplies.
2. The disposal of refuse matter of cities.
3. Animal diseases dangerous to man.
4. Maritime quarantine, and regulations for the control of contagious and infectious diseases, and their mutual relations.

Precedence will be given papers upon the above subjects, although other papers of a sanitary nature will be received by the committee. The topics given indicate the subjects which it is desired to consider, yet they are not to be regarded as the exclusive topics of the meeting. Papers of ability and practical application upon any subject connected with the public health interests will be received.

THE possibility of the importation of yellow fever from South America is illustrated by a recent case at Brooklyn. The captain of a steamer from Para died last week of the fever at St. John's Hospital in that city. It would appear that the captain was the only person who went ashore at Para, and he sickened as he drew near to the harbor of New York. He alone was on the sick-list while passing through quarantine. He was so feeble that he could not stand erect while the customary examination by the port-official was in progress; he sat in his chair while talking with that officer. After his death, the steamer was ordered back to quarantine, and the crew, which had been discharged and dispersed, were found and returned to the same place for observation. The opinion of the medical attendants of the case, confirmed by an autopsy, is that it was a clear case of *vomito*. The health officer of the port has expressed doubt as to the correctness of the diagnosis of the fever in this captain's case, stating that there is no evidence that yellow fever has existed at Para.

WE are in receipt of the English edition of Sir Morell Mackenzie's account of "The Fatal Illness of Frederick the Noble." It is a duodecimo volume of 246 pages, and is illustrated by drawings showing, among other things, the appearance of the vocal cords before and after operation, the different canulæ used, with their position *in situ*, and von Bergmann's alleged "false passage" and the resulting abscess. In his preface Sir Morell complains, with reason, that he has been refused access to the documents deposited in the State Archives bearing on the late Emperor's case, which had been granted the German physicians, and which include "the written refusal of the Emperor (then Crown Prince) to submit to any other external operation than tracheotomy."

Mr. Edgar S. Werner, of New York, announces a reprint of Mackenzie's work, together with an English translation of the official report of the German physicians.

## SOCIETY PROCEEDINGS.

### PHILADELPHIA COUNTY MEDICAL SOCIETY.

*Stated Meeting, September 12, 1888.*

THE PRESIDENT, J. SOLIS-COHEN, M.D.,  
IN THE CHAIR.

DR. J. SOLIS-COHEN read a paper on

#### SYPHILIS OF THE LARYNX, TRACHEA, AND BRONCHI.

Syphilitic processes are among the most important morbid processes affecting the larynx and trachea. Not only do they injure the structural integrity of the organs directly; but, by their location in the regions occupied by the origin and course of nerve supply, they lead to denutrition of the tissues generally, and to serious motor impairments of the muscles of the larynx. So varied are the manifestations of syphilis, and so important to the welfare of the patient their timely recognition, that considerable detail is proper in their elucidation. In hardly any other department of living pathology has the laryngoscope been of more signal service than in dispelling obscurities in the conception and comprehension of syphilitic disease of the larynx.

The distinctions between secondary and tertiary syphilis, as manifested in the upper air-passages, are so irregular and uncertain, that many writers prefer the terms recent and tardy. In fact, however, secondary lesions are sometimes tardy and tertiary lesions sometimes precocious. Secondary lesions are sometimes present as the sole manifestation of that period. Sometimes they precede cutaneous manifestations. Most frequently they occur in subjects already affected with what are known as mucous patches in other portions of mucous membrane, or with early cutaneous syphilides.

*Pathology.*—The earliest and far most frequent manifestations are subacute and diffusely hyperæmic conditions of portions of the mucous membrane, of varied extent and intensity; an erythema with turgescence, but

without hypersecretion, occurring within from six to ten weeks after infection. The affected surface exhibits at first the usual rose-color of congestion, but, as stases, infiltrations, and hæmic transudations occur, it becomes more or less livid in patches which present mottled or flaky discolorations. Superficial erosions often ensue. Occasionally, deep-seated ulceration occurs. Sometimes paresis of the muscles of the larynx is produced. The erosions may be due simply to denutrition of epithelium from mere pressure by infiltrations; or to disintegration of a characteristic proliferative lesion known as the papule or mucous patch, by some termed broad condyloma, a product, according to Virchow, of the same histological character as the indurated chancre and the various gummosus formations, namely, an infiltration of tissue with nucleated embryonic cells. These papules are characteristic, but by no means frequent syphilitic products in the larynx; and are so infrequent in the trachea that their occurrence there is denied by authorities the very highest. They are multiple recurrent lesions, almost invariably associated with mucous patches on other mucous membranes; usually lasting from three to five weeks, and sometimes much longer. They are observed from within a few weeks to a few months after infection; sometimes earlier, occasionally as late as eighteen months. They are far the more frequent in tuberculous subjects who have contracted syphilis.

The opinion is held by some that superficial ulceration is always due to their disintegration; and that they must have existed in many cases in which they have not been observed. Histologically they are composed of small-celled infiltrations into the corium and into dilated hypertrophied papillæ. Hence they occur in localities where papillæ exist. Consequently they cannot occur below the vocal bands. They are quite red when recent, but soon change to light gray as the epithelium thickens; they then appear as small, wrinkled, opalescent, flattish, ovoidal elevations, varying in size from pin-heads to small peas; depressed in the centre when mature, and when recent circumscribed with a peripheric inflammatory areola. They may subside without trace. When erosion takes place, the surface becomes punctatedly red from exposure of the papillæ. They may undergo destructive ulceration. They may become the starting-points of small pointed vegetations, histologically identical with papillomata. These are probably non-specific in character, though due to irritation excited by specific processes. They do not undergo ulceration, and rarely undergo absorption under specific medication. When forcibly removed, they repullulate quickly. Similar vegetations sometimes project from the edges of ulcerated patches of tissue. Though usually small, sessile, and multiple, they may acquire such bulk as to interfere seriously with respiration.

The erosions which occur on the surface of the papules or upon simply erythematous mucous membrane are usually superficial, but may extend through the mucous membrane and beneath it, under bad hygienic conditions. Under slight provocative exposures to cold and wet, fluxionary oedema sometimes takes place in their vicinity, occasionally to such an extent as to be menacing to life. The epiglottis often becomes very much thickened; the vocal bands thickened and dentately eroded. There seems to be no tendency for secondary lesions to extend from the larynx to the trachea.

Tertiary lesions come under notice most frequently in the stage of ulceration, usually following the liquefaction of gummous nodules, gummous infiltrations, or true gummata, as may be. The epiglottis is the most frequent seat; so frequent, that its lingual and lateral ulceration has been erroneously deemed pathognomonic of syphilis; but destructive lesions may occur in every portion of the larynx. The ulceration is both serpiginous and deep-seated, and while more commonly unilateral, there seems practically to be little limit to its phagedenic destructive ravages under unfavorable conditions, as it destroys and penetrates all the tissues, soft and cartilaginous. Slight provocation may produce fluxionary oedema in this stage also, which may be of the most serious character. Serious hemorrhages may occur from penetration of bloodvessels; and apnoea may ensue from incarceration of fragments of necrosed cartilages and soft tissues. Ulceration may be attended with proliferative vegetations which may occlude the air-passages. Superficial ulceration may heal with moderate cicatrization which eventually becomes hardly noticeable. Deep and extensive ulcerations heal under peculiar whitish, lustrous, stellate, retractile cicatrices, similar to those which follow burns. Instead of cicatrization, adhesions may take place between contiguous raw surfaces, and strictures of various kinds be formed in consequence.

The gummous lesions preceding these ulcerations are of three kinds: small gummous multiple nodules or nodular syphilides; diffuse gummous infiltration; and gummata proper, usually isolated.

Small gummous nodules (nodular syphilide, Lewin) vary in size from that of small bird-shot to that of peas, and are usually grouped in well-defined determinate figures in the body of the mucous membrane, and often so contiguous as to appear confluent. Gummata proper present as firm hemispherical nodules or tumors, from the size of peas to that of cherries or almonds, and sometimes much larger, in the connective tissue beneath the mucous membrane; usually uniform in outline, sometimes lobulated; undiscolored or reddish at the base and yellowish at the summit. Gummous infiltrations present as more or less longitudinal or more diffuse submucous thickenings corrugating the surface of the mucous membrane. All these products may undergo absorption.

When not absorbed, gummous nodules undergo purulent liquefaction. At this time they become softer, and more yellowish at the summit, the mucous membrane at the base becoming more inflamed and thickened, the whole mass looking not unlike a furuncle. The summit becomes perforated, and gives exit to thickened, yellow pus, with granular admixture of debris at first. The orifice rapidly enlarges by ulceration until it becomes fully as large in circumference as the nodule was, or larger; and readily coalesces with ulcerations from contiguous nodules. The ulceration extends in depth until it occupies the entire volume of the nodules, and then may penetrate all the tissues beneath, even to the perichondrium and cartilage.

The ulceration of the nodulous syphilide, as studied in a series of cases by Lewin, is said to take place more from periphery to centre than the reverse, being shallow at first, and then gradually deepening. The ulcer is round, depressed, and sharply bordered. Its bed is covered with a secretion which, from previous fatty degen-

eration, or purulent metamorphosis, is either thickish, or nearly lardaceous, or composed of purulent detritus.

The more longitudinal and diffuse gummous infiltrations undergo liquefactive ulceration much more slowly; but the subsequent ulceration, when unchecked, extends much more rapidly, and becomes more readily serpiginous and phagedenic; so that, coalescing with similar conditions in the vicinity, large surfaces in continuity become involved in its ravages. As it extends in superficies it penetrates slowly in depth until it also involves the deeper structures close to the perichondrium, and sometimes to the cartilage. Ulceration varies in rapidity, extent, and penetration according to the succulence or resistance of the tissues contiguous. The ulceration from diffuse gummous infiltration is preceded, according to Lewin, by extensive fatty degeneration of its surface, which gives it an almost grayish-white tinge. This is soon followed by actual defects which, at first shallow, increase in depth, and gradually penetrate to the perichondrium and the cartilage. These ulcers are characterized, like those from the nodules, by sharp definite circumscription, and by their being surrounded with an inflammatory swollen zone. They appear often as though a piece of swollen tissue had been cut out. The edges are often beset with slight crenations, which give them a gnawed appearance, but are never undermined; and their bottom is covered with a yellowish-white adherent mass, composed of pus, fatty detritus, and shreds of tissue. Gummata proper sometimes remain unchanged for prolonged periods. When they undergo degenerative metamorphosis there is formed, according to Lewin, only the characteristic viscid fluid, suppuration being exceptional. Ulceration takes place, however, in some instances, and penetrates deeply into the tissues beneath, as in the other two forms. Under unfavorable hygienic conditions of system, or of surroundings, the phagedenic ravages may become uncontrollable. They have been known to attack an artificial opening made to prevent suffocation by a gumma (Holden, *New York Medical Journal*, January 29, 1887).

Perichondritis and chondritis being set up after either form, the ulceration may penetrate the cartilage to the tissues external, forming a perichondrial abscess, which ruptures externally by a more or less circuitous route, whence the fragments of dead tissues are discharged.

Taken in point of frequency, the cartilaginous structures seem to be vulnerable in the order following: epiglottis, posterior vocal processes, arytenoids, supra-arytenoids, cricoid, cuneiform, and thyroid. Coming to the softer parts, the vocal bands are attacked next in frequency to the epiglottis, the left band far more frequently than the right, the interior supraglottic walls of the larynx, the aryepiglottic folds, the interarytenoid fold, the posterior wall, the ventricular bands, the subglottic walls of the larynx, the exterior of the soft parts in the pyriform sinus. When the cartilages are attacked, whether primitively or consecutively, the chain of morbid phenomena is perichondritis, chondritis, calcification, caries, necrosis, and elimination of sequestra in crumbled masses and in fragments. The elimination of dead cartilages may consume months, and even years. It usually takes place by the interior route, occasionally by the exterior. In both instances abscess and fistula are formed, and elimination of large fragments by the



interior route sometimes produces suffocative paroxysms, and occasionally actual suffocation.

The epiglottis, as repeatedly noted, is especially vulnerable to the syphilitic process, and every variety of lesion possible may ensue in any extent, from insignificant erosion to complete destruction, the character of the lesion depending upon that of the structure destroyed. It is this, as pointed out by Seiler, which gives such an irregular conformation to the epiglottis when its glands have been destroyed.

Exulceration of the entire mucous membrane at the edge reveals the exposed cartilaginous structure as a yellowish-white stripe embedded between two thickened masses of spongy-looking tissue. Ulceration of the cartilage often commences at the anterior surface in the form of a round ulcer with thickened excavated edges. Destructive ulceration usually progresses from the side and from the edge. When the valve is only partially destroyed, its remains may present two or more irregular fragments separated by fissures of varying depth, or a single fragment of any breadth, from a small stripe to nearly the entire bulk.

When totally destroyed the orifice of the larynx is separated from the post-lingual sulcus by a more or less irregular ridge of ulcerated tissue, which, after cicatrization, presents as a pale, deformed stump. This, however, does not, as rule, prevent gluttony, and in some instances does not even interfere with it; the occlusion of the larynx being effected by the base of the tongue, on the one hand, and by close approximation of the ventricular bands and sphincter-like approximation of the aryepiglottic folds, on the other.

The other cartilages, when the subject of destructive progressive ulceration, are macerated out of their investments, as it were. The ulcerative process extends into the cartilage surrounding it, if a small one, or circumscribing a portion of it, if it be a large one. The cartilage then perishes by necrosis, is laid bare, and becomes detached from its connections, in some instances remaining entangled in a sort of pocket scooped out of the soft tissues. The necrosed cartilage finally breaks through to the interior, and is usually discharged by expectoration. If it be situated below the glottis, paroxysms of suffocation may ensue, or even actual apnoea, as from any other foreign body. Exfoliations of the cricoid cartilage are the most frequent source of these untoward results, which, however, sometimes ensue from exfoliations of the thyroid.

The ulcerative process sometimes penetrates blood-vessels and hemorrhage follows. Such hemorrhage has been known to terminate fatally (Turck, *op. cit.*, p. 413, illustrated).

The vocal bands frequently sustain permanent lesion varying from minute losses of substance to entire destruction. Transversal dentated erosion of the border is not uncommon, and detachment from the posterior vocal processes not infrequent. Sometimes abundant irregular papillary proliferations take place, forming mobile, projecting, pyramidal, or irregular dendritic vegetations, which project like soft, mobile stalactites into the interior, and which are large enough, in exceptional instances, to demand operative interference. Similar conditions and productions may prevail with the ventricular bands. Superficial ulcerations may heal with moderate cicatrization, which eventually becomes hardly

noticeable. In deep and extensive ulcerations, when cicatrization occurs, a peculiar lustrous, whitish, stellate, contractile cicatrix is formed, similar to the syphilitic cicatrix in other mucous membranes. Instead of cicatrization, adhesions often take place between ulcerated surfaces, and thus a variety of injurious morbid conditions occur. The vocal bands may become united by a broad fibrinous band stretching between them, or by a similar obturator formed of their thickened and distended mucous membrane. The membranous web thus formed between the vocal bands usually unites them for a variable distance, commencing at the commissure, the posterior border of the structure being crescentic in outline. Exceptionally the cords may become involved their entire length, with an orifice in the central portion of the web (Navratil).

This membranous union has been known to take place in six days (Rossbach: Langenbeck's *Archives*, vol. xiv.). In a case watched by Sommerbrodt (*Berlin. klin. Woch.*, April 1, 1878), the anterior third united in fourteen days, and the union of the bands was complete in six weeks. In other cases the vocal bands become united without any membrane intervention.

Other adhesions sometimes take place, which may seriously impair gluttony, phonation, and even respiration. These comprise depression of the epiglottis to one side or the other, or to an aryepiglottic fold, and preventing proper closure of the valve or complete elevation; adhesion of the epiglottis to either lateral pharyngeal wall; adhesion of ventricular to vocal bands, sometimes preventing closure of the glottis, and often producing a shrill, weak, piping voice; adhesions anteriorly of the two vocal bands or of the two ventricular bands; adhesions of the inner surfaces of the mucous membrane of the arytenoid cartilages, so as to fix the vocal bands immovably in the median position. Other results of syphilitic laryngitis are hypertrophies, diffuse and discrete, of mucous membrane, connective tissues, or muscular substance, and consequent stricture, varying in extent, locality, and interference with function; myopathic paralysis; muscular atrophy, and the development of morbid growths.

Perichondritis or chondritis, whether following ulcerative destruction of the soft tissues or preceding it, usually excites considerable fibrinous infiltration into the adjacent submucous connective tissue, producing a chronic fibrinous oedema. When extensive, this produces suffocative symptoms, and may threaten asphyxia. Sometimes the submucous infiltrations become organized and transformed into dense fibrous tissues incapable of undergoing absorption, and thus they produce deformity, occlusion of the larynx, and stricture. The strictures are often incapable of yielding to systematic dilatation, even when instituted early; and hence tracheotomy is usually necessary to provide artificial means for respiration below the seat of obstruction. After tracheotomy, the process may progress to complete obliteration.

These strictures are of the most varying form and calibre, some of them distorting the configuration of the interior of the larynx almost out of recognition. Fortunately, most of them occur in the supraglottic region, where they are far more accessible to effective treatment.

Lesions of either soft tissues or cartilage in the neighborhood of the important crico-arytenoid articulations excite non-specific inflammation of the joint which may

produce true or false ankylosis. Syphilis is probably the most frequent cause of this lesion. When the specific process invades the joint, the ligaments and perichondrium suffer, and true ankylosis, or luxation, or disarticulation, and even discharge of the arytenoid and supra-arytenoid cartilages may ensue.

In the latter stage of unrestrained lesion, the cachexia is much the same as in analogous advanced stages of tuberculosis.

Myopathic paralyses of the muscles of the larynx may occur in the later periods of secondary syphilis, and at any period of tertiary syphilis. They are most frequently unilateral, the left side being affected far oftener than the right. The onset is often sudden or acute, following severe or sudden exposure to cold and dampness. The paralysis often affects the dilator muscles, and bilateral paralysis of the dilators is not infrequent. Paralyses of the arytenoid muscle and of the entire constrictor group are the most frequent varieties. These paralyses differ in their pathological origin from other examples of paralysis in syphilis, which are due, respectively, to compression of the tract of the nerve-supply by diseased tracheo-bronchial glands or other structure, and to neural or cerebral lesions which present in the latter stages of the confirmed dyscrasia.

Tertiary lesions of the trachea are first observed so very frequently in the stage of ulceration, that it had been assumed that tertiary syphilis of the trachea always produces ulceration (Vierling). Schech and others have reported instances of resorption of gummata under specific medication. The clinical tendency, however, is to ulceration. Tracheal ulcerative lesions are sometimes unassociated with lesions elsewhere in the aerial tract. Much more commonly they are found associated with similar lesions in the larynx, in the bronchi, or in both.

Pharyngeal syphilis exists in many instances (thirty out of forty-six, collated by Vierling), and pulmonary syphilis in not a few (sixty out of fifty, Schech). They are often found associated with additional syphilitic lesions at a distance. In a large proportion of instances a primitive bronchus is affected, the left one the more frequently; in some, both primitive bronchi; in a few, the smaller ramifications (Vierling); and, exceptionally, even the minutest (Lancereaux). In some instances syphilitic lesion is confined to the bronchi (five cases, by Vierling). The upper portion of the trachea suffers most when the larynx is involved; the lower portion, when the disease is isolated or associated with syphilis of the bronchi. In some instances the middle portion alone suffers (Vigla and Charnal, Berger, Mackenzie, of Baltimore, Semon); exceptionally, the two extremities, with complete conservation of the middle portion (Tessier, cited by Rey).

When not occurring in direct continuity with similar lesion in the larynx, the most frequent seat of ulceration is on the anterior surface of the lower portion of the trachea just above the bifurcation whence it extends upward, or in patches continuously sometimes as far as the cricoid cartilage; sometimes almost completely around the interior in periphery, occasionally completely around. Multiple perichondritis is easily set up and results in abscess, denudation of cartilage, calcification, caries, and necrosis. Portions of dead cartilage are sometimes coughed up in fragments. Sometimes semi-detached portions project into the interior and interfere seriously

with respiration and with expectoration. The ulceration usually begins in a number of small ulcers which extend in depth and in periphery, baring the perichondrium, and causing portions of the cartilaginous rings, or entire rings, to undergo denudation, necrosis, and exfoliation. Coalescence with similar ulcerating surfaces, or phagedenic extension, sometimes produces very extensive ravages which may involve nearly the entire circumference of the trachea, and nearly, occasionally quite, its entire length. Flaps of detached membrane sometimes fall over, producing valvular impediments to inspiration, or to expiration, according to the position of the attachments. The cicatrization of annular ulcerations produces stricture often so low down as to be beyond relief even from tracheotomy, the parts not being well adapted to respond to artificial dilatation. The strictures are irregularly ovoidal in shape, sometimes funnel-shaped, and of varying thickness from a few lines to that of several rings.

These cicatrices may reduce the calibre of the trachea so considerably as to prevent respiration. Occlusion to the calibre of a crowquill is not uncommon, and still greater occlusion has been noted in some instances. Annular stricture at the bifurcation may become so great as barely to admit the passage of a delicate probe. (Obtulowicz: *Cent. f. Chir.*, 1879, No. 7.)

Irregular annular dilatation of the trachea is often produced by the pressure of the air current above the stricture and sometimes below it. Even dilatation of the bronchi has been noticed.

Projecting ridges of cicatricial tissue below the point of stricture are sometimes so located as to occlude the inferior orifice of a tracheal canula more or less, a point not sufficiently recognized, for it might be practicable in some instances to push a canula into a position which would allow its inferior extremity to pass the obstruction.

Stricture of the bronchi is rare. It affects the left bronchus more frequently (Verneuil, *et al.*); sometimes the right one (Wilks, *et al.*); occasionally both (Virchow, *et al.*). The connective tissue around the strictured portions usually undergoes permanent sclerotic proliferation. Sometimes there is great peritracheal sclerosis, sometimes none. The peritracheal glands may undergo great enlargement. All these conditions superadded to the internal stricture, may greatly increase stenosis.

Ulceration sometimes penetrates through the trachea producing abscess opening into the œsophagus or the mediastinum, the aorta (Rokitansky: *Path. An.*, Bd. 111, p. 22; Wilks: *Trans. Path. Soc.*, London, 1865, p. 52), the pulmonary artery (Kelly: *Id.*, 1872, p. 45), or the vena cava (Turner: *Id.*, xxxvii. p. 117). In at least two instances of ulceration of the left bronchus the left branch of the pulmonary artery has been found perforated (Vierling).

Inflammation around the trachea or bronchi sometimes produces adhesions to the œsophagus or to other tissues, which depresses the trachea and larynx and impairs their upward movements in glutton. Sometimes it produces peritracheal or tracheo-bronchial abscess. Abscess of a bronchus, sometimes deeply seated, has occurred after tracheotomy, apparently as a result of too assiduous swabbing of the canula.

The lesions of hereditary syphilis are almost identical with those of the gummous infiltrations of tertiary syphilis.

They sometimes appear very early. Ulcerations have been noticed in infants at two months of age (Parrot: *Prog. Méd.*, 1878, p. 653). Stricture from perichondritis has been noticed at the same age (Fränkel: *Wien. med. Woch.*, 1868, No. 18; Parrot: loc. cit.).

**Symptomatology.**—The laryngeal symptoms of secondary syphilis are not characteristic. They are chiefly comprised in dissonant alterations of the voice, either hoarseness, dysphonia, and in some cases occasional or temporary aphonia. The hoarseness is supposed to have some peculiarity which has been termed *raucedo syphilitica*, but this is not the case. In some instances it is simply due to the catarrhal laryngitis, in others to paresis of one or more of the constrictor muscles, or possibly to paralysis of the tensors. Respiration is not affected except in those instances in which oedema occurs in such a position as to occlude the passage for air, when it will be announced by dyspnoea and stridulous respiration, the characteristic symptoms of that condition. Titillation and cough are not as frequent as in inflammations of other origin. In many instances there is no tickling and no cough, no pain and no dysphagia.

Dysphagia is not present unless there be oedema of the parts utilized or pressed upon in glutton.

In tertiary syphilis of the larynx the symptoms are usually those of impairment of phonation, followed in severe cases by dyspnoea and stridor also, chiefly inspiratory. The stridor is worse at night from inaction of the auxiliary muscles of respiration. Should the mechanical impediment to respiration increase, inspiratory depression of the soft parts below the sternum takes place. If relief is not obtained, artificially or otherwise, asphyxia supervenes from imperfect aëration of the blood. Suffocation may occur suddenly from impaction of detached cartilage; but is more frequently slow enough in its approaches to allow time for tracheotomy.

Titillation and cough are more frequent in the earlier stages than in secondary syphilis; but they diminish after ulceration has taken place, except in so far as they are produced from time to time by morbid products detained upon diseased and adjacent surfaces. Pain is infrequent before the period of ulceration; after that it may be severe, and radiate into the ears as in other ulcerative diseases. In the early stage there is no expectoration. The earliest expectoration is of collateral catarrhal products only. As ulceration progresses it becomes muco-purulent, and then purulent and sanguineo-purulent, and mixed with detritus according to the stage and location of the lesion.

If gangrene takes place, the odor becomes fetid, and the expectoration contains fragments of dead, soft, and cartilaginous tissue, as may be.

Dysphagia ensues when the disease is in a locality to interfere with glutton, and odyphagia when ulcerations have occurred in the same localities.

In tertiary syphilis of the trachea the symptoms affect mainly the function of respiration, the voice often remaining normal even when breathing is seriously embarrassed.

Pain along the course of the trachea, if constant, is indicative of lesion at that particular point. Cases may run their entire course without any special symptom, even in the presence of stricture of the trachea, and of the bronchi, and of extensive disorganization as revealed at the post-mortem examination.

In hereditary syphilis, the symptoms are sometimes congenital and may remain practically continuous for years. Respiration and phonation are both affected. The cry of the infant sometimes possesses a shrill metallic resonance which has been compared to that of a tin trumpet. Cough is more frequent in the child than in the adult. Glutton is often difficult and sometimes painful. Expectoration occurs in the suppurative stages when the child is old enough to expel the products, which by infants are swallowed or retained in the air-passages. Laryngismus is a symptom of frequent occurrence in young children.

**Etiology.**—The probable condition attracting the manifestation of constitutional syphilis to the larynx is superficial catarrhal laryngitis from hereditary or acquired proclivity, or from exposure, or from abuse of tobacco, alcohol, or other indulgence, or from misuse of the voice. Such exposures cause more males to be affected than females, as there is no assignable sexual reason for preponderance. Tracheal lesions, on the other hand, have been reported more frequently in females, probably because the laryngeal lesion is attended to more promptly by the male. Syphilitic disease often extends by continuity from the oropharyngeal region to the larynx, principally along the pharyngo-epiglottic fold to the epiglottis, and thence along the aryteno-epiglottic fold, and from the two structures to the interior. Hereditary syphilis has been observed in intrauterine life (Monti: *Med. Times*, Phila., April 28, 1877, p. 336). Hereditary syphilis of the intensest character has been occasionally observed at a very early age, as in the case of an infant whose symptoms began with coryza in the tenth week of life, and terminated in death by suffocation from stenosis nineteen days later. Post-mortem, with examination, revealed, in addition to syphilitic lesions in the liver, destructive perichondritis of cricoid and left arytenoid cartilage, and fatty degeneration of the arytenoid and both posterior crico-arytenoid muscles and the left superior nerve (Fränkel: *Wien. med. Woch.*, 1868, Nos. 69, 70, cited by Ziemssen and by Mackenzie). Children less than a year of age often show laryngeal lesions of hereditary syphilis, and ulcerative lesions have been seen at two months of age (Parrot: *Prog. Méd.*, 1878, p. 635). Many cases occur in children but a few years of age, and sometimes the manifestations are deferred to the period of puberty or even later. Indeed, in opposition to the received opinion of syphilographers, I have reason to believe that in a few instances I have seen its manifestations delayed as late as the third and even the fourth decennium. True, in such instances as the latter it is quite possible that infection may have been acquired in some method unknown, without having been followed by any secondary manifestations, or that early hereditary manifestations may have escaped recognition. The secondary manifestations occur most frequently in adolescents and young adults. They appear most frequently at periods varying from a few weeks to a few months after infection, sometimes as late as the fourteenth or seventeenth month (Morgan). Tertiary lesions are most frequent at rather maturer ages, and occur occasionally in quite advanced life. They have been reported as early as the sixteenth month (Türck, op. cit.), and as late in their first appearance as the thirtieth (Türck), and even the fiftieth year (Mackenzie). Tracheo-bronchial tertiary lesions have been reported as appear-



ing as early as the ninth month after infection, but these lesions are usually coincident with the laryngeal lesions when not immediately consecutive to them.

Most of the instances of tracheal syphilis occur in individuals whose employments expose them to irritation from dusts of various kinds (Vierling: *Deutsches Arch. f. klin. Med.*, 1878, Bd. 21). Hereditary tracheo-bronchial syphilis is far less frequent than the laryngeal forms. It has been observed before the age of puberty.

**Diagnosis.**—Differential diagnosis between secondary and tertiary lesions is sometimes difficult, particularly in the transitional period especially described by Whistler. The discriminating characteristics are less well marked in the laryngeal syphilis, perhaps, than in any other variety.

It may, however, be broadly stated that secondary lesions, erythematous, papular condylomatous, or paralytic, are superficial; and that tertiary lesions are gummatous, ulcerous, carious, necrotic, and deep-seated. Laryngitis occurring within a few months of infection is almost invariably secondary. Lesions appearing before the termination of the third year are presumptively secondary: those appearing within the third year, secondary or transitional; and those appearing after the termination of the third year, tertiary. Nevertheless, secondary lesions may be ulcerous, and undoubted tertiary manifestations have been recognized even within nine months of infection.

The history of the case, and the previous or actual presence of manifestations of syphilis elsewhere, are the main positive factors in the diagnosis of specificity, especially in the early stages of either variety. The later lesions of tertiary syphilis are often sufficiently characteristic; sometimes not at all so. In cases of doubt, antisyphilitic treatment will almost always detect a lesion of syphilitic origin, but not invariably. Hence, in instances of strong suspicion, the various methods of antisyphilitic medication should be thoroughly tried before that test is abandoned. This suspicion is justifiable in cases of obstinate chronic laryngitis, whether ulcerative or not, in individuals in whom no other appreciable local or constitutional cause can be detected.

Laryngoscopic inspection is an invaluable aid in diagnosis; though practically indispensable, it is inadequate for fully appreciating the extent of deeply seated lesions; and its revelations are not always sufficient to establish the diagnosis in the absence of corroborative lesions elsewhere. Erythematous and catarrhal inflammation of secondary syphilis, when diffuse, are not to the ordinary eye distinguishable from similar non-specific conditions. Circumscribed erythema, though usual in syphilis, occurs in non-specific laryngitis also, consequently that condition alone is insufficient for discrimination. Patchy erythema on the vocal bands, and elsewhere, may be regarded as characteristic. Not so, however, the shaded pigmentations at the extremities of the vocal bands.

Symmetrical bilateral localization of erythematous and other patches is highly characteristic of secondary syphilis; but a contrary condition by no means excludes the diagnosis. Isolated bilateral congestion of the supra-arytenoid structures and of the cartilages of Wrisberg has been cited as pathognomonic. Nothing can be more fallacious or misleading. Enlarged inguinal and post-cervical glands furnish excellent corroborative testimony of syphilis.

Papules, or condylomata, upon an erythematous mucous membrane, are to be considered pathognomonic. Their recognition may require an exceptionally good light on the one hand, or repeated examinations on the other. They must be carefully discriminated from minute collections of mucus or of saliva.

Diffuse gummosus infiltration is to be distinguished first from inflammatory syphilitic infiltration by the co-existence of gummosus processes elsewhere, its more circumscribed contour, and its sharper definition. Differential diagnosis is much easier after it has reached the stages of liquefaction and ulceration.

Syphilitic ulceration usually proceeds from above downward, rarely in the opposite direction, and often in extension from ulceration in the pharynx. Repair usually proceeds from below upward. Apart from these guides, there is nothing positively characteristic enough to determine an ulceration to be syphilitic in character by mere inspection.

The absence of pain has been regarded as characteristic; but, on the one hand, carcinomatous ulceration often exists without pain, and, on the other hand, the ulcerative lesions of syphilis are sometimes attended with lancinating pains of the most severe character.

In the gummatous stage of tertiary syphilis diagnosis is not difficult. Nodular syphilides and gummata are recognized in the forms and at the localities mentioned under pathology. They may be confounded with other neoplasms, and with abscess. In cases of doubt, antisyphilitic treatment should clear up the diagnosis. The physical distinction between gummata and condylomata may in some instances be obscure (Semon).

The main reason why gummata are so infrequently seen as to have led some observers to an erroneous opinion as to their rarity, is that many patients do not present themselves until after the stages of liquefaction and ulceration have become established. When this stage has not been observed, and the larynx, as is more usual, is not inspected until after ulceration has considerably progressed, the appearances are not always characteristic. They may be confounded with those of lupus, carcinoma, and tuberculosis. The general diathesis, the clinical history, the existence of enlarged submaxillary and post-cervical lymphatic glands, the character of concomitant affections of the skin and mucous membrane, the aspect of the patient, assist in discrimination. Sometimes, too, tuberculous and syphilitic lesions coexist.

The typical tertiary ulcer, sharply defined, and below the surface of the mucous membrane, is more or less circular when recent, more or less crenated when reparation is taking place at one or more points of the circumference, and looking as though cut out with a punch when in cedematous tissues. Its borders are sharp, elevated, but not often undermined, and more or less rounded in their visible outline, and are surrounded by a more or less circumscribed inflammatory areola in the mucous membrane. The bottom feels hard to the probe on palpation. The bed of the ulcer is grayish, or lardaceous, yellow from fatty detritus, and covered with adherent concrete pus, through which, here and there, prominent rosy granulations often project. The surrounding tumefaction is harder and more indurated than in other varieties of ulcer. Purulent accumulations are rather indicative of the syphilitic process. At a later date

denuded or necrosed cartilage may be visible in suitably located ulcers.

In cases in which neoplasms have become developed at the seat of existing ulcerations or of cicatrized ulcerations or erosions, it is often impossible to pronounce as to their nature, even by the test of anti-syphilitic treatment. Not only do such neoplasms exist independently of the syphilitic process, or as the result of irritation provoked by syphilitic process in the vicinity; but when undoubtedly syphilitic in origin they rarely disappear under specific medication. Tertiary syphilis is usually recognizable in the stages of oedema of the larynx; and almost always in the reparative stages of cicatrization, or in the subsequent stages of stenosis, whether from cicatricial retraction or from organization of effused products.

**Prognosis.**—Secondary lesions, even when ulcerative, are most frequently curable without cicatrix or without any other sequel. Ulceration of the vocal bands sometimes leaves permanent defect of tissue. The prognosis is good except during temporary conditions of oedema, when it may be grave for the time being. The inflammatory congestion and turgescence are more chronic than in catarrhal inflammations, and are often recurrent. Actual hyperplasia is apt to remain permanent, even after cure of the syphilitic lesion, despite the most assiduous treatment; and when it occupies a vocal band the voice may be permanently impaired. The singing voice may remain imperfect, although the conversational voice be fully restored; the injured tissues being unequal to the nicety of adjustment requisite for cantation.

In tertiary lesions the prognosis depends mainly on two factors: First, on the impairment of the general health, and the significance of lesions elsewhere, especially in the brain and meninges and in other important organs. Second, in the extent of ulceration and the character of deformation or stricture which may follow. Temporary gravity exists in the presence of oedema; during the period of exfoliation of necrosed cartilages, and in acute bilateral paralysis of the dilator muscle, the result of exposure to cold or other cause, or to unilateral paralyses when the opposite side is immobile from gumma, or from crico-arytenoid ankylosis (Charazac: *Rev. Mens. de Lar.*, Sept. 1884), any of which conditions may demand prompt tracheotomy to prevent death by suffocation. Ulcerative lesions of the trachea may be fatal by hemorrhage from penetration of large bloodvessels; by pneumoŕnia from access of food through perforation of œsophagus (Berger); or by septic processes due to rupture of the mediastinum. Permanent impairment of the voice is to be expected in all cases in which the vocal bands undergo serious injury, and in many in which permanent changes are likely to take place in other structures contiguous to the glottis.

Gluttony is rarely affected, even after complete destruction of the epiglottis; and in exceptional cases difficulty is mainly confined to fluids swallowed without deliberation.

Stricture rapidly supervening upon hyperplasias is often amenable to active treatment, sometimes with striking rapidity (Krishaber: *loc. cit.*); but the more frequent stricture of slow progression can only exceptionally be brought under control.

Serious danger attends even cure of extensive ulcerative lesions in the interior of the larynx, for the resulting stricture, if severe, is likely to necessitate tracheotomy,

with great probability of permanent retention of a canula. It is rarely amenable even to excision of cicatricial tissue by external access. Subglottic stricture is much more serious than supraglottic, and tracheal far more serious than laryngeal stricture. Stricture of the trachea, when low down, is practically insusceptible of amelioration; and death by slow apnoœa, or by sudden suffocation, is the usual outcome.

When the syphilitic cachexia has advanced so far as to have produced incurable lesions in important viscera or in the cerebrum, death may ensue from these causes despite sustained cure of syphilitic lesions in the larynx. In cases complicated with paralysis of the dilator muscles of the larynx from cerebral lesion, the death may take place by occlusion of the glottis and suffocation, or by encephalitis and coma.

In hereditary syphilis the prognosis is very much the same as in tertiary syphilis; being much worse in infancy and childhood than in more delayed manifestations. The small size of the larynx renders stricture and intercurrent oedema far more significant; and the tendency to spasm of the larynx inherent to all laryngeal affections in childhood presents an additional element of danger. Fatal issues from these three causes are not infrequent. An element of uncertainty as to the final result remains in all varieties of syphilis of the larynx and trachea, due to the fact that permanent liability to recurrence prevails in many instances, despite the best apparent results of the most judicious treatment; and often, too, after prolonged intervals of immunity from any further manifestation of constitutional syphilis.

**Treatment.**—Fortunately, lesions even of great destructive and menacing tendency are amenable, as a rule, to treatment; often promptly.

The treatment, broadly stated, is that applicable to constitutional syphilis in general; mercury in the early manifestations and iodides in the late ones. In many of the latter, if not most, the mixed treatment combining the two specifics is the most serviceable. In congenital syphilis the gray powder is believed to be the most efficacious form of the drug. While willing to admit that secondary lesions often subside without traces and without much risk of subsequent tertiary manifestations, although mercury be withheld, I deem it the more prudent practice, and, therefore, the best practice, to employ mercury; in the belief that its specific constitutional influence affords the patient better protection as to future manifestations. As to the value of iodides in tertiary syphilis, there is no difference of opinion. Tonics are often indicated. All sources of irritation, exposures, excessive use of the voice, alcohol and tobacco, are to be avoided.

Sedative inhalations in vapor or spray are often of great topical benefit in subduing collateral inflammation; and antiseptic inhalations are indicated in gangrenous cases.

Secondary syphilis. Mercury may be administered by the stomach or by the skin. When the lesions are moderately severe or slow in progress, the corrosive chloride may be administered in doses of from one-sixteenth to one-eighth grain, three times a day. The green iodide may be given in doses gradually increased from one-sixth of a grain three times daily to the point of tolerance. The addition of extract of belladonna may cause it to be better borne by the stomach. In individuals in

whom serious gastric disturbance is produced before any specific effect has been noted, and in seriously severe cases and cases of rapid progress inunctions of a drachm of mercurial ointment daily are preferable, or pencillings with solutions of oleate of mercury in oleic acid, ten per cent. Lewin prefers hypodermatic injections of corrosive chloride. Concurrent stomatitis is to be combated by the internal administration of potassium chloride, or the use of a saturated solution of that salt, or of a weak solution of potassium permanganate as a mouthwash. It is hardly necessary at the present day to mention that salivation is to be avoided. In my own experience topical medication is, as a rule, superfluous in non-ulcerative secondary syphilis, and often unnecessary in the presence of ulceration. When topical medication seems necessary, inhalations of sprays of corrosive chloride (Demarquay), half an ounce or more daily of a solution containing one grain to four ounces of water, are useful locally and constitutionally. In particularly obstinate conditions, especially in the presence of hyperplasias, the topical application of solutions of iodine and potassium iodide in glycerine (Schnitzler), half a drachm and a drachm respectively to the ounce, made daily or at longer intervals, sometimes accelerates the cure.

In the transitional stage and in the tertiary stages, the mixed treatment has been the most beneficial in my own practice; one-sixteenth to one-eighth of a grain of the corrosive chloride, five to ten grains of potassium iodide in half an ounce or more of the compound syrup of sarsaparilla, three times a day. It may sometimes be necessary to increase the dose of the iodide up to the point of tolerance. In such cases the "grain to drop" solution is the most convenient preparation. The danger of inducing oedema of the larynx by sudden large doses must not be forgotten. When necessary, sodium or ammonium iodide may be substituted for the potassium salt, or hydriodic acid may be employed.

In the presence of oedema, hypodermatic injections of corrosive chloride (Lewin), one-thirtieth of a grain, twice a day for a day or two, and after improvement at intervals of three days or more, have proved quite efficacious. If amelioration is not prompt, and if the patient cannot be carefully watched by an attendant competent to interfere in an emergency, it is best, in my opinion, to perform prophylactic tracheotomy, instead of awaiting its urgent indication. The same rule is applicable to threatening cases of extensive hyperplasia whether from specific or from non-specific infiltrations.

Nevertheless, remarkably happy results, even in urgent cases of these kinds, have frequently followed active treatment by inunction (Krishaber) and by hypodermatic injection (Lewin). Intubation of the larynx from the mouth (O'Dwyer) has been recommended as applicable in many instances of oedema and constriction heretofore treated by tracheotomy. As yet, I know of no experience with intubation in this special connection.

Ulcerations heal more promptly when the constitutional treatment is seconded by topical cauterizations with fused silver nitrate, or with mercuric nitrate one part to from four to ten of water, or with cupric sulphate in crystal or saturated solution. Chromic acid, one part in from five to eight of water, has long been extolled (Isambert). Some prefer iodoform (Morgan). On the other hand, extensive ulceration often heals promptly under the influence of constitutional treatment alone.

Vegetations, detached flaps of mucous membrane, and semi-detached fragments of necrosed cartilage call for operative removal with cutting forceps, evulsion forceps, or snares, as may be most convenient, if these products are so located as to interfere with freedom of respiration or to threaten such interference. When these manipulations are impracticable, tracheotomy may be requisite. When tracheotomy has been performed under any of the conditions mentioned, the canula is to be removed as soon it has become apparent that its retention is no longer essential to the safety of the patient. Cicatricial stricture of the larynx may be treated by the introduction of the intubation tube through the natural passage (O'Dwyer). This treatment may be applicable to stricture high up in the trachea. Stricture in the middle portion of the trachea requires low tracheotomy and the introduction of a tube long enough to reach beyond the constriction. Stricture at the bifurcation is hopeless.

Paralyses, even those of the posterior crico-arytenoids, are usually amenable to anti-syphilitic treatment even when of considerable standing. This fact seems to indicate that the atrophy found in necrotic paralysis is not due to simple inaction of the muscle, but rather to trophic impairments of neurotic origin. Electrization may be employed when relief does not ensue from systemic medication.

Membranous webs, occluding the glottis from side to side, are divided by incision or by galvano-cautery, the edges cauterized, and readherence prevented, if possible, by frequent introduction of dilating sounds. These laryngoscopic operations are often rendered futile by insurmountable tendency to recicatization, whereby the morbid condition is reproduced. Success in cases of this kind would seem to require exposure of the interior of the larynx by external division of the thyroid cartilage, and excision of the whole of the cicatricial tissue (Mackenzie).<sup>1</sup>

When syphilitic laryngitis has existed for a long time, such an amount of destruction may have taken place, and such a degree of systemic poisoning, as to render recovery impossible. The constrictions produced by the cicatrices of extensive ulcers, and the adhesions between adjoining surfaces, in cases that recover, are often such as to render tracheotomy necessary, with the permanent use of the tube; for the constrictions following syphilis are not, as a rule, amenable to dilatation.

Threatened asphyxia or unconquerable dyspnoea, from gumma, loose cartilage, morbid growth, abscess, or oedema, may necessitate tracheotomy. Tracheotomy for the purpose of conquering dyspnoea due to tumefactions in the larynx is perfectly justifiable, and usually successful. It is likewise justifiable for the mere purpose of securing rest to the organ—much more so, indeed, than in analogous conditions attending tuberculosis.

The treatment for local adhesions consists in relieving the tension as far as possible by laryngoscopic division of the constricting bands of tissue, with knife or with electric cautery, and then cauterizing and recauterizing the adjacent surfaces, to prevent fresh adhesions. These cases require careful watching and prompt attention to overcome the disposition to recurrence, which is very apt to take place in spite of all efforts. When the epiglottis

<sup>1</sup> Med. Times and Gaz., August 19, 1871, p. 218.



is implicated, much good can be done by teaching the patient to move the organ frequently by means of his forefinger.

In a case of stenosis due to "concentric hyperchondrosis," as a result of the hyperplastic chondro-perichondritis, Prof. Heine performed a successful resection of the anterior portion of the thyroid cartilage, splitting that structure in the middle line, separating the perichondrium and superjacent soft tissues, to the distance of one-half its surface on the two sides, with the elevator, and then removing the denuded portions by longitudinal section with bone forceps. The patient rallied so well from the operation that an artificial vocal apparatus could be substituted for the ordinary canula on the fifth day. He became able to resume work after a while; but the disease made new inroads, and he died, eleven months later, in an advanced stage of tuberculosis.

Despite the most judicious treatment, and the most satisfactory immediate results, recurrence or recrudescence takes place in many instances at variable intervals, requiring resumption of specific treatment. The most satisfactory results claimed by any writer have been in cases actively treated by Lewin with hypodermatic injections. It is advisable to keep patients under observation for many months after active treatment has been discontinued. Mercuric iodide (biniodide) in small doses, one-twentieth to one-tenth of a grain, three times daily, may judiciously be given for prolonged periods during which apparent health exists. Potassium iodide, in diminishing doses, should be administered from time to time for a few days every month until the patient begins to show susceptibility to physiological effects from small doses; and then this susceptibility should be tested from time to time at intervals of a few months. Such supervision for two years at least seems to present the best prospect for ridance from the diathesis.

It may be mentioned in conclusion that, under intercurrent attacks of erysipelas, obstinate cases of tertiary syphilis of the larynx and trachea have undergone cure after having resisted all medicinal treatment.

*Stated Meeting, October 10, 1888.*

THE PRESIDENT, J. SOLIS-COHEN, M.D., IN THE CHAIR.

DR. G. E. DE SCHWEINITZ presented the following paper on

ACUTE UNILATERAL OPTIC NEURITIS, WITH THE REPORT OF A CASE.

Cases of sudden failure of sight in one eye, with little or no ophthalmoscopic changes, are occasionally encountered, in which the attack is attributed to exposure to cold. Sometimes in these instances congestion of the optic disk is present, and a retro-ocular neuritis has taken place. Other cases of acute optic neuritis, sometimes monocular, sometimes double, are on record. Thus, Max Haadel<sup>1</sup> observed nine cases, some single and some double, with and without defects in the field of vision, usually with serious disturbance of sight, mostly with pronounced inflammation of the papilla and neighboring retina, in which exposure to a draught of air was the imputed cause. Periostitis at the foramen opticum was

doubtful and the absence of syphilis, sugar, and albumen, lead, and other poisons was assured in every case. In M. Schlüter's<sup>1</sup> statistics, among 38 cases of neuritis and neuro-retinitis, 7 are classed as primary, while the remainder are arranged as follows: 13 of central origin, 6 from specific causes, 4 followed as the result of pathological orbital processes, 2 from abuse of alcohol and tobacco, 2 from albumen, and 1 each in connection with the puerperal state, after injury, from acute myelitis, and from hereditary reasons.

E. Schmidt,<sup>2</sup> in an examination of the cases of optic neuritis in the clinic of Prof. Hirschmann, at Charkow, found, among 120 cases in which the etiology was recorded with some degree of exactness, two instances of papillitis or papillo-retinitis due to cold. Voissius<sup>3</sup> has recorded a case of monocular optic neuritis in a man aged sixty-one, the attack coming on as the result of catching cold during a long wet drive. Recovery, with a hemiopic defect in the field of vision, was the outcome of the disorder. Roi<sup>4</sup> reports some examples of optic neuritis which he looked upon as rheumatic. They appeared monocular, were accompanied by a speedy diminution of visual acuity passing into amaurosis, but not, however, to the exclusion of a return to normal sharpness of sight. H. F. Hansell<sup>5</sup> describes two instances of acute optic neuritis of rheumatic origin, one monocular in a healthy married woman, and the other double in a man aged thirty-one. In each there was sudden loss of vision, swollen optic disks, and under treatment a rapid return to normal visual acuity. In Dr. Hansell's paper references to analogous cases are recorded, and L. W. Fox<sup>6</sup> has recorded an instance of acute monocular optic neuritis. Recently R. H. Derby<sup>7</sup> has reported a case of unioocular neuro-retinitis in a girl whose father had had syphilis, but who had no other manifestation of constitutional taint. There was at first a central scotoma, then optic neuritis. Light-perception was lost, but under mercurial inunctions and iodide of potash the swelling of the disk, which had amounted to 7 D., subsided, and fair vision was recovered.

Cases of optic neuritis without evident cause are occasionally recorded, as one by Power.<sup>8</sup> The patient was an anæmic lad of seventeen; the neuritis was double; albumen and syphilis were absent; the lad had had two attacks of rheumatism, and his father was gouty. Friedenwald<sup>9</sup> describes an instance of right optic neuritis in an otherwise healthy girl of fourteen, preceded by violent headache and other symptoms indicating grave cerebral disturbance, but in which perfect recovery followed. He classed her case with these examples of optic neuritis, referred to by Juler, occasionally met with in young girls, the cause assigned being some menstrual disturbance, the presence of which, however, careful inquiry fails to elicit. Usually the neuritis is preceded by severe head-

<sup>1</sup> Inaug. Diss., Berlin, 1881. Abst. Nagel's Jahresbericht, xii. Jahrgang, p. 305.

<sup>2</sup> Wjestnik Ophth., 1885, p. 273. Archives of Ophthalmology, vol. xv. p. 249.

<sup>3</sup> Klin. Monatsbl. f. Augenheilk., xxi. p. 298.

<sup>4</sup> Dela névrite optique rhumatismale, Paris, 1886.

<sup>5</sup> Amer. Journ. of Ophthalmology, July, 1884.

<sup>6</sup> THE MEDICAL NEWS, August 7, 1886.

<sup>7</sup> Amer. Oph. Med. Soc., 1888. N. Y. Med. Journ., Oct 6, 1888.

<sup>8</sup> Trans. Oph. Soc., U. King, vi. pp. 361-368, 1886.

<sup>9</sup> N. Y. Med. Journal, Feb. 5, 1887.

<sup>1</sup> Inaug. Diss., Berlin, 1885. Abst. Centralbl. f. Prakt. Augenheilk., p. 223, 1885.

ache, and the prognosis is unfavorable. No further reference to the many cases of neuro-retinitis described in connection with irregularities of the menstrual functions need be made.

Hirschberg<sup>1</sup> has seen several instances of primary optic neuritis, whose course is very typical. The disease is divided into three stages: the first, characterized by great visual disturbance, with slight ophthalmoscopic appearances; the second, by diminution of the visual disturbance and very marked inflammation of the disk; and the third, usually by almost complete recovery, with pallor of the disk. The cases mostly occur in women, but are not connected with derangement of the sexual functions. Partaking somewhat of the nature of such cases, but not without a history of exposure as the exciting cause, is the subject of this communication.

Mrs. W., aged forty, consulted me July 11, 1888, because for a week past she had suffered from neuralgic pains in and above the eyes, most marked upon the right side. Bright light was distressing and pain followed when the eyes were rolled upward; slight tenderness was apparent when pressure was made upon the right globe.

The vision in each eye was  $\frac{5}{VII_{17}}$ , the amplitude of accommodation 3.5 D.; there was high insufficiency of the internal recti, so that a divergent squint was evident when the eyes attempted to fix a point 15 cm. distant. The fundus of each revealed no gross lesions, save a slight retinal haze around the upper and lower edges of the right disk, the deeper layers of which were gray. The macules were normal and the refraction appeared to be a simple hypermetropia of 1.5 D. In the absence of any general derangement the peri-orbital pain was attributed to eye-strain, and atropia drops were ordered for the purpose of measuring the refraction error. The correcting glass proved to be + 1.5 s. and with it normal vision ( $\frac{5}{V}$ ) was acquired. During the application of the atropia the neuralgia disappeared. The drops were discontinued and the patient directed to return in two weeks.

During the measurement of the refractive error, the patient, on several occasions stated that although she saw the same number of letters with the right eye that she did with the left, she failed to see them with the same distinctness; but no changes at this time were present in the fundus. This indistinctness gradually assumed the appearance of a definite, dark area in the field of vision, the peri-orbital pain returned, and five days after the last ophthalmoscopic examination had failed to discover any changes in the disk or retina, she returned with the vision sunken to ability to count fingers and well-marked right-sided optic neuritis. All edges of the disk were woolly and its upper margins entirely hidden, while a flame-shaped hemorrhage was situated above and to the inner side. The apex of the swelling was + 3. D., the vessels were about normal in size, and the macula free from disease. The pupil was of medium size and acted sluggishly to light and shade. A few days before this time she had gone on an excursion with her children, became much overheated, and had afterward waded about in a neighboring brook. It was in the evening of this day

that the neuralgia returned, the definite dark area appeared in the field of vision, and shooting pains attacked the deep muscles of the thighs.

Further examination proved an entire absence of any symptoms pointing to brain disorder; the heart and lungs were normal and the patient was not anæmic, there had been no suppression of the menstrual flow and this function was natural; no active uterine disease existed, except a slight prolapsus which was not then under treatment. The urine was free from albumen, sugar, and tube casts, and the last recent illness, several years before, had been an attack of peritonitis from which a good recovery had resulted. Dr. James Tyson, who saw the case in consultation, confirmed the accuracy of these examinations. Syphilitic infection and the action of lead or other poisons were carefully excluded. The vision continued to sink, and on the following day was reduced to faint quantitative light-perception and the disk, if anything, was slightly more swollen. The temple was freely leeches and the patient directed to take fifteen grains of salicylate of sodium before each meal, and seven and a half grains of iodide of potassium, with one twenty-fourth of a grain of bichloride of mercury after each meal.

Three days later, or on July 30th, the vision was slightly improved to the ability to see the hand move and the pain was distinctly better. The medicine was continued and small fly blisters ordered placed upon the temple. August 1st, the salicylate of sodium was discontinued, but the other medication continued, vision improved and large letters (Sn CC) were faintly recognized. August 6th, marked improvement,  $V = \frac{5}{XXXV}$ ; edges of the disk visible all around and only a faint remnant of the hemorrhage, August 20th, neuritis had practically subsided;  $V = \frac{5}{X}$  form and color fields normal in extent; no scotomata; ordered one twenty-fourth of bichloride of mercury after each meal. September 9th,  $V = \frac{5}{VI_{17}}$ , disk pallid, and all traces of the neuritis had disappeared.

In the absence of any symptoms pointing to cerebral disturbance, with no uterine disease save a slight prolapsus and the history of a leucorrhœa no longer active; with the menstrual functions normal; with a healthy circulatory apparatus and the urine free from albumen, sugar, and tube casts, and with the direct account of overheating and exposure, we may fairly conclude that this was an instance of genuine, acute optic neuritis.

The history shows that before any ophthalmoscopic changes were evident, and before there was any positive diminution in visual acuity, the field of vision was invested with a haze which afterward assumed a definite, dark form, probably coincident with the first appearance of the inflammation around the papilla and the loss of sight. Hence it is evident that the attack was in process of formation and was precipitated by the wetting of the feet and sudden cooling after an overheating.

Cases of optic neuritis apparently due to exposure, as has been pointed out by Leber and others, are mostly monocular; and rheumatism, perhaps upon insufficient evidence, has been cited as the cause. Gowers,<sup>1</sup> writing

<sup>1</sup> Centrabl. für Prakt. Augenheilk., Nov. 1887.

<sup>1</sup> Medical Ophthalmology, 2d ed., p. 230.

upon this point, says: "Neuro-retinitis has been loosely ascribed to rheumatism, but only on the ground that it has sometimes appeared to be due to cold." Rheumatic inflammation at the back of the orbit, however, according to the same author, may damage the optic nerve. Michel,<sup>1</sup> commenting upon a reported case of acute peripheral retro-bulbar neuritis, remarks that he has never observed a "rheumatic" neuritis and considers the assertion of such as a mark of ignorance of the causes especially operative in the production of inflammation of the optic nerve. Hansell (*loc. cit.*) thinks "that a true rheumatic inflammation of the fibrous coat of the nerve between the optic foramen and the sclerotic" quite possible, but owing to the infrequent opportunity for section and examination admits that "our pathology is, at best, speculative." The central scotoma which existed in this and similar cases denotes an affection of the sheath of the nerve extending into its substance, not, as Hirschberg remarks, as would have been supposed before the macular fibres were discovered, a central inflammation extending outward.

The prognosis depends to a certain extent upon the site of the lesion and the termination may be favorable, as in the case reported, or a permanent atrophy of the disk may result. Hirschberg (*loc. cit.*), in his cases of primary optic neuritis, has found usually that the second eye is attacked; the interval may be days, or weeks, or months. Three of his cases illustrate this fact. A woman, aged forty-two, suddenly lost the sight of the right eye; in six days from the beginning of the attack this was well, but the left eye was attacked and optic neuritis developed; in three weeks recovery had taken place and the fundi were normal. In a second case a woman, aged twenty, had slight temporary loss of vision in the right eye three weeks before coming under observation for loss of vision in the left, which came on eight days before. Four months later she came with the right eye similarly affected, while the left had practically recovered. A third instance was that of a peasant girl, aged seventeen, who had her right eye attacked in 1878, recovered, and in 1884 her left eye was attacked, which also recovered.

The treatment has already been discussed. Leeching of the temple, followed by blisters, diaphoresis, together with the salicylates and iodide of potash, yield the best results. Improvement may take place before the remedies have time to take effect.

## NEWS ITEMS.

*The Washington Obstetrical and Gynecological Society* at its annual business meeting, held October 19, 1888, elected the following officers for the ensuing term:

*President.*—Joseph Taber Johnson, M.D.

*Vice-Presidents.*—D. Webster Prentiss, M.D.; W. W. Johnston, M.D.

*Treasurer.*—George Byrd Harrison, M.D.

*Recording Secretary.*—Samuel S. Adams, M.D.

*Corresponding Secretary.*—G. Wythe Cook, M. D.

### Corrigendum.

#### STERILIZED MILK.

In Dr. Baruch's note in our issue of last week, page 486, the temperature which will sterilize milk should have been stated as 266° F.

<sup>1</sup> Nagel's Jahresbericht, xvii. Jahrgang, p. 381.

#### OFFICIAL LIST OF CHANGES IN THE STATIONS AND DUTIES OF OFFICERS SERVING IN THE MEDICAL DEPARTMENT, U. S. ARMY, FROM OCTOBER 23 TO OCTOBER 29, 1888.

FORWOOD, WILLIAM H., *Major and Surgeon* (U. S. Army, Fort Snelling, Minnesota).—Is granted leave of absence for one month, on surgeon's certificate of disability.—S. O. 100, *Headquarters Department of Dakota, St. Paul, Minnesota*, October 20, 1888.

WOLVERTON, WILLIAM D., *Major and Surgeon*.—Is relieved from duty at Fort D. A. Russell, Wyoming Territory, and will report in person to the commanding officer Fort Douglas, Utah Territory, for duty at that post.—Par. 16, S. O. 248, *Headquarters of the Army, A. G. O., Washington*, October 24, 1888.

By direction of the Secretary of War, the leave of absence granted JOHN W. WILLIAMS, *Major and Surgeon*, in S. O. 209, Division of the Atlantic, October 4, 1888, is extended one month.—Par. 14, S. O. 246, A. G. O., October 22, 1888.

By direction of the Secretary of War, leave of absence for one month, to take effect on the completion of his present duties, is granted EDWARD C. CARTER, *Captain and Assistant Surgeon*.—Par. 13, S. O. 246, A. G. O., October 22, 1888.

BARTHOLOMEW, JOHN H., *Major and Surgeon* (U. S. Army, Fort McIntosh, Texas).—Is granted leave of absence for one month, on surgeon's certificate of disability.—*Headquarters Department of Texas, San Antonio, Texas*, October 10, 1888.

BROWN, PAUL R., *Captain and Assistant Surgeon*.—Is relieved from duty at Fort Sidney, Nebraska, and will report in person to the commanding officer, Fort D. A. Russell, Wyoming Territory, for duty at that post.—Par. 16, S. O. 248, *Headquarters of the Army, A. G. O., Washington*, October 24, 1888.

By direction of the Secretary of War, WILLIAM A. ARTHUR, *Captain and Assistant Surgeon*, is relieved from duty at Fort Bowie, Arizona Territory, and will report in person to the commanding officer Fort Bayard, New Mexico, for duty at that post.—Par. 21, S. O. 250, A. G. O., *Washington, D. C.*, October 26, 1888.

By direction of the Secretary of War, WILLIAM C. BORDEN, *First Lieutenant and Assistant Surgeon*, is relieved from duty at San Antonio, Texas, and will report in person to the commanding officer Fort Ringgold, Texas, for duty at that post.—Par. 11, S. O. 247, A. G. O., *Washington*, October 23, 1888.

#### PROMOTION.

LORING, LEONARD H., *Captain and Assistant Surgeon*.—To be Surgeon, with the rank of Major, October 9, 1888, vice Meacham, deceased.

#### OFFICIAL LIST OF CHANGES IN THE STATIONS AND DUTIES OF THE MEDICAL CORPS OF THE U. S. NAVY, FOR THE WEEK ENDING OCTOBER 27, 1888.

SMITH, HOWARD, *Passed Assistant Surgeon*.—Detached from the "Wabash," and granted six months' leave, with permission to leave the United States.

AUZAL, E. W., *Assistant Surgeon*.—Ordered for examination preliminary for promotion to Passed Assistant Surgeon.

WIEBER, F. W. F., *Assistant Surgeon*.—Ordered for examination preliminary for promotion to Passed Assistant Surgeon.

AUZAL, E. W., *Assistant Surgeon*.—After examination, detached from Naval Academy, and ordered to Navy Yard, New York.

URIC, J. F., *Assistant Surgeon*.—Detached from the "Franklin," and ordered to the Coast Survey Steamer "Gedney."

OWENS, THOMAS, *Assistant Surgeon*.—Detached from Coast Survey Steamer "Gedney," and ordered to Coast Survey Steamer "Blake."

BERRYHILL, F. A., *Assistant Surgeon*.—Detached from Coast Survey Steamer "Blake," and ordered to Naval Academy.

HARRIS, A. N. T., *Assistant Surgeon*.—Detached from Naval Hospital, Mare Island, California, and wait orders.

HALL, JOHN H., *Passed Assistant Surgeon*.—Detached from the "Monongahela," and wait orders.

CRAWFORD, M. H., *Passed Assistant Surgeon*.—Detached from the "Vandalia," and ordered to the "Monongahela."